Alcoa Fastening Systems

ALCOA

Makers of Huck®, Marson®, Recoil®
Brand Fasteners, Tools & Accessories

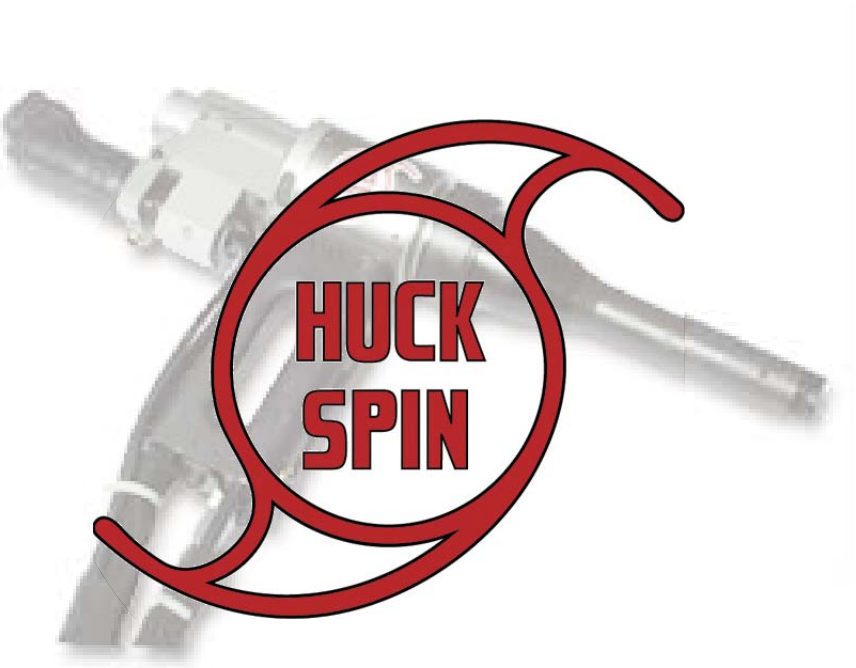
INSTRUCTION MANUAL

HUCK-SPIN®

HYDRAULIC INSTALLATION

TOOLS AND EQUIPMENT

ALL MODELS



07-10-2013
HK1076

HUCK®

EC Declaration of Conformity

Manufacturer:
Huck International, LLC, Industrial Products Group, 1 Corporate Drive, Kingston, NY, 12401, USA

Description of Machinery:
Models HS52 and HSSFT-M## installation tool families and specials based on their designs (e.g. PR#####).

Relevant provisions complied with:
Council Directive related to Machinery (2006/42/EC)
British Standard related to hand held, non-electric power tools (ISO 11148-1:2011)

European Representative:
Rob Pattenden, Huck International, Ltd. Unit C Stafford Park 7, Telford Shropshire TF3 3BQ, England, United Kingdom

Authorized Signature/date:
I, the undersigned, do hereby declare that the equipment specified above conforms to the above Directive(s) and Standard(s).

Signature: _____

Full Name: Robert B. Wilcox

Position: Engineering Manager

Location: Huck International, LLC d/b/a Alcoa Fastening Systems
Kingston, New York, USA

Date: 07/06/2013 *(June 7, 2013)*

ALCOA HUCK

Declared dual number noise emission values in accordance with ISO 4871
A weighted sound power level, LWA: **80** dB (reference 1 pW) Uncertainty, KWA: 3 dB
A weighted emission sound pressure level at the work station, LpA: **69** dB (reference 20 µPa) Uncertainty, KpA: 3 dB
C-weighted peak emission sound pressure level, LpC, peak: **97** dB (reference 20 µPa) Uncertainty, KpC: 3 dB
Values determined according to noise test code ISO 15744, using as basic standards ISO 3744 and ISO 11203. The sum of a measured noise emission value and its associated uncertainty represents an upper boundary of the range of values which is likely to occur in measurements.

Declared vibration emission values in accordance with EN 12096	
Measured Vibrations emission value, *a*:	**.21** m/s^2
Uncertainty, K:	**.20** m/s^2
Values measured and determined according to ISO 28662-1, ISO 5349-2, and EN 1033	

Test data to support the above information is on file at Alcoa Fastening Systems, Industrial Products Group, Kingston Operations, Kingston, NY, USA.

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Safety Instructions

GLOSSARY OF TERMS AND SYMBOLS:

- Product complies with requirements set forth by the relevant European directives.
- **READ MANUAL** prior to using this equipment.
- **EYE PROTECTION IS REQUIRED** while using this equipment.
- **HEARING PROTECTION IS REQUIRED** while using this equipment.

WARNINGS: Must be understood to avoid severe personal injury.

CAUTIONS: show conditions that will damage equipment and or structure.

Notes: are reminders of required procedures.

***Bold, Italic type and underlining*: emphasizes a specific instruction.**

I. GENERAL SAFETY RULES:

1. A half hour long hands-on training session with qualified personnel is recommended before using Huck equipment.
2. Huck equipment must be maintained in a safe working condition at all times. Tools and hoses should be inspected at the beginning of each shift/day for damage or wear. Any repair should be done by a qualified repairman trained on Huck procedures.
3. For multiple hazards, read and understand the safety instructions before installing, operating, repairing, maintaining, changing accessories on, or working near the assembly power tool. Failure to do so can result in serious bodily injury.
4. Only qualified and trained operators should install, adjust or use the assembly power tool.
5. Do not modify this assembly power tool. This can reduce effectiveness of safety measures and increase operator risk.
6. Do not discard safety instructions; give them to the operator.
7. Do not use assembly power tool if it has been damaged.
8. Tools shall be inspected periodically to verify all ratings and markings required, and listed in the manual, are legibly marked on the tool. The employer/operator shall contact the manufacturer to obtain replacement marking labels when necessary. Refer to assembly drawing and parts list for replacement.
9. Tool is only to be used as stated in this manual. Any other use is prohibited.
10. Read MSDS Specifications before servicing the tool. MSDS specifications are available from the product manufacturer or your Huck representative.
11. Only genuine Huck parts shall be used for replacements or spares. Use of any other parts can result in tooling damage or personal injury.
12. Never remove any safety guards or pintail deflectors.
13. Never install a fastener in free air. Personal injury from fastener ejecting may occur.
14. Where applicable, always clear spent pintail out of nose assembly before installing the next fastener.
15. Check clearance between trigger and work piece to ensure there is no pinch point when tool is activated. Remote triggers are available for hydraulic tooling if pinch point is unavoidable.
16. Do not abuse tool by dropping or using it as a hammer. Never use hydraulic or air lines as a handle or to bend or pry the tool. Reasonable care of installation tools by operators is an important factor in maintaining tool efficiency, eliminating downtime, and preventing an accident which may cause severe personal injury.
17. Never place hands between nose assembly and work piece. Keep hands clear from front of tool.
18. Tools with ejector rods should never be cycled with out nose assembly installed.
19. When two piece lock bolts are being used always make sure the collar orientation is correct. See fastener data sheet for correct positioning.

II. PROJECTILE HAZARDS:

1. Risk of whipping compressed air hose if tool is pneudraulic or pneumatic.
2. Disconnect the assembly power tool from energy source when changing inserted tools or accessories.
3. Be aware that failure of the workpiece, accessories, or the inserted tool itself can generate high velocity projectiles.
4. Always wear impact resistant eye protection during tool operation. The grade of protection required should be assessed for each use.
5. The risk of others should also be assessed at this time.
6. Ensure that the workpiece is securely fixed.
7. Check that the means of protection from ejection of fastener or pintail is in place and operative.
8. There is possibility of forcible ejection of pintails or spent mandrels from front of tool.

III. OPERATING HAZARDS:

1. Use of tool can expose the operator's hands to hazards including: crushing, impacts, cuts, abrasions and heat. Wear suitable gloves to protect hands.
2. Operators and maintenance personnel shall be physically able to handle the bulk, weight and power of the tool.
3. Hold the tool correctly and be ready to counteract normal or sudden movements with both hands available.
4. Maintain a balanced body position and secure footing.
5. Release trigger or stop start device in case of interruption of energy supply.
6. Use only fluids and lubricants recommended by the manufacturer.
7. Avoid unsuitable postures, as it is likely for these not to allow counteracting of normal or unexpected tool movement.
8. If the assembly power tool is fixed to a suspension device, make sure that fixation is secure.
9. Beware of the risk of crushing or pinching if nose equipment is not fitted.

IV. REPETITIVE MOTION HAZARDS:

1. When using assembly power tool, the operator can experience discomfort in the hands, arms, shoulders, neck or other parts of the body.
2. When using tool, the operator should adopt a comfortable posture while maintaining a secure footing and avoid awkward or off balanced postures.
3. The operator should change posture during extended tasks to help avoid discomfort and fatigue.
4. If the operator experiences symptoms such as persistent or recurring discomfort, pain, throbbing, aching, tingling, numbness, burning sensations or stiffness, these warnings should not be ignored. The operator should tell the employer and consult a qualified health professional.

V. ACCESSORIES HAZARDS:

1. Disconnect tool from energy supply before changing inserted tool or accessory.
2. Use only sizes and types of accessories and consumables that are recommended. Do not use other types or sizes of accessories or consumables.

VI. WORKPLACE HAZARDS:

1. Be aware of slippery surfaces caused by use of the tool and of trip hazards caused by the air line or hydraulic hose.
2. Proceed with caution while in unfamiliar surroundings; there could be hidden hazards such as electricity or other utility lines.
3. The assembly power tool is not intended for use in potentially explosive environments.
4. Tool is not insulated against contact with electrical power.
5. Ensure there are no electrical cables, gas pipes, etc., which can cause a hazard if damaged by use of the tool.

VII. NOISE HAZARDS:

1. Exposure to high noise levels can cause permanent, disabling hearing loss and other problems such as tinnitus, therefore risk assessment and the implementation of proper controls is essential.
2. Appropriate controls to reduce the risk may include actions such as damping materials to prevent workpiece from 'ringing'.
3. Use hearing protection in accordance with employer's instructions and as required by occupational health and safety regulations.
4. Operate and maintain tool as recommended in the instruction handbook to prevent an unnecessary increase in the noise level.
5. Select, maintain and replace the consumable / inserted tool as recommended to prevent an unnecessary increase in noise.
6. If the power tool has a silencer, always ensure that it is in place and in good working order when the tool is being operated.

VIII. VIBRATION HAZARDS:

1. Exposure to vibration can cause disabling damage to the nerves and blood supply to the hands and arms.
2. Wear warm clothing when working in cold conditions and keep hands warm and dry.
3. If numbness, tingling, pain or whitening of the skin in the fingers or hands, stop using the tool, tell your employer and consult a physician.
4. Support the weight of the tool in a stand, tensioner or balancer in order to have a lighter grip on the tool.

X. HYDRAULIC TOOL SAFETY INSTRUCTIONS:

1. Do not exceed maximum pressure setting stated on tool.
2. Carry out a daily check for damaged or worn hoses or hydraulic connections and replace if necessary.
3. Use only clean oil and filling equipment.
4. Power units require a free flow of air for cooling purposes and should therefore be positioned in a well ventilated area free from hazardous fumes.
5. Ensure that couplings are clan and correctly engaged before operation.
6. Do not inspect or clean the tool while the hydraulic power source is connected. Accidental engagement of the tool can cause serious injury.
7. Be sure all hose connections are tight.
8. Wipe all couplers clean before connecting. Failure to do so can result in damage to the quick couplers and cause overheating.

System Matrix

This Instruction manual covers the following installation tools. Where components other than the installation tools are mentioned, such as the Single Tool Controller and the Powerig, please refer to those individual instruction manuals.

Tools:

Where pictorial examples are given, the tool used is the HS52RM. See individual tool assembly drawings in this manual for other configurations.

HS52RM

HS52-21-0-3-0

HS52-81-0-2-0

HS52-81-0-3-0

HS52-81-0-3-50

HS52RM-1-1-0

HS52RM-1-1-50

Single Tool Controller:

125725 Instruction Manual part no. HK998

Powerigs:

Where pictorial examples are given, the Powerig used is the 918. See individual Powerig instruction manuals for pressure settings and component identification.

940HS Instruction Manual part no. HK943

940-220HS Instruction Manual part no. HK943

918 series Instruction Manual part no. HK786

Power Supply:

125727-2 Instruction Manual part no. HK1001

Huck-Spin Part Numbers Structure

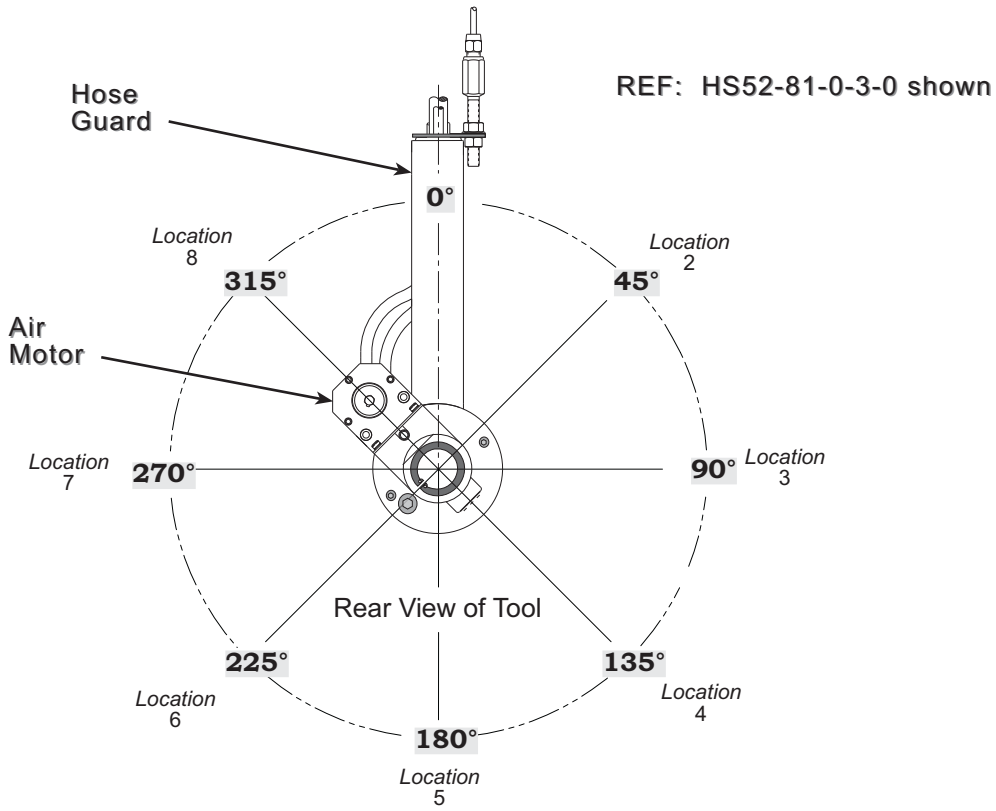
HS52 - X X - X - X - X

- **Custom Options:** such as special hose length, etc.
- **0, 1, 2, 3:** Trigger Option (•)
- **0, 3, 5, 7:** Handle Location
- **0, 1:** Air Motor Type (••)
- **2, 4, 5, 6, 8:** Air Motor Location *(see figure below)*

(•) NOTE: -0 Option: No Trigger mounted on Hose Guard.
-1 Option: Trigger located on front side of Hose Guard.
-2 Option: Trigger located on rear side of Hose Guard.
-3 Option: Triggers located on both front and rear sides of Hose Guard.

(••) NOTE: -0 Option: Standard Air Motor used. *(NO LONGER AVAILABLE)*
-1 Option: Optional high-torque Air Motor used.

HS52 Air Motor Locations



Principle of Operation

PULL PRESSURE (PULL CYCLE)

During a typical full-pressure cycle, with the Huck-Spin fastener in place and the collar threaded on, the operator positions the tool nose assembly over the fastener pintail and presses the trigger.

The Huck-Spin tool Thimble spins onto the pin threads until limit switch rod senses enough engagement, which then directs pressurized hydraulic fluid into the chamber in front of the tool's piston, forcing it back, and pushing the nose assembly's Anvil forward to swage the collar onto the pin.

RETURN PRESSURE (RETURN CYCLE)

When proper swage presure is reached, the hydraulic pressure will be redirected to the rear of the Piston, and the Anvil will automatically eject off the swaged Collar, and the Thimble counter-rotates to unscrew from the pin.

This results in all tool and nose assembly components returning to their home positions, ready to install the next fastener.

Specifications

POWER SOURCE:
Huck POWERIG Hydraulic Unit

HOSE KITS:
Use only genuine HUCK Hose Kits rated @ 10,000 psi working pressure.

MAX OPERATING TEMP:
125° F *(51.7° C)*

MAX FLOW RATE:
2 gpm *(7.6 l/m)*

MAX INLET PRESSURE:
5,700 psi *(393 BAR)*

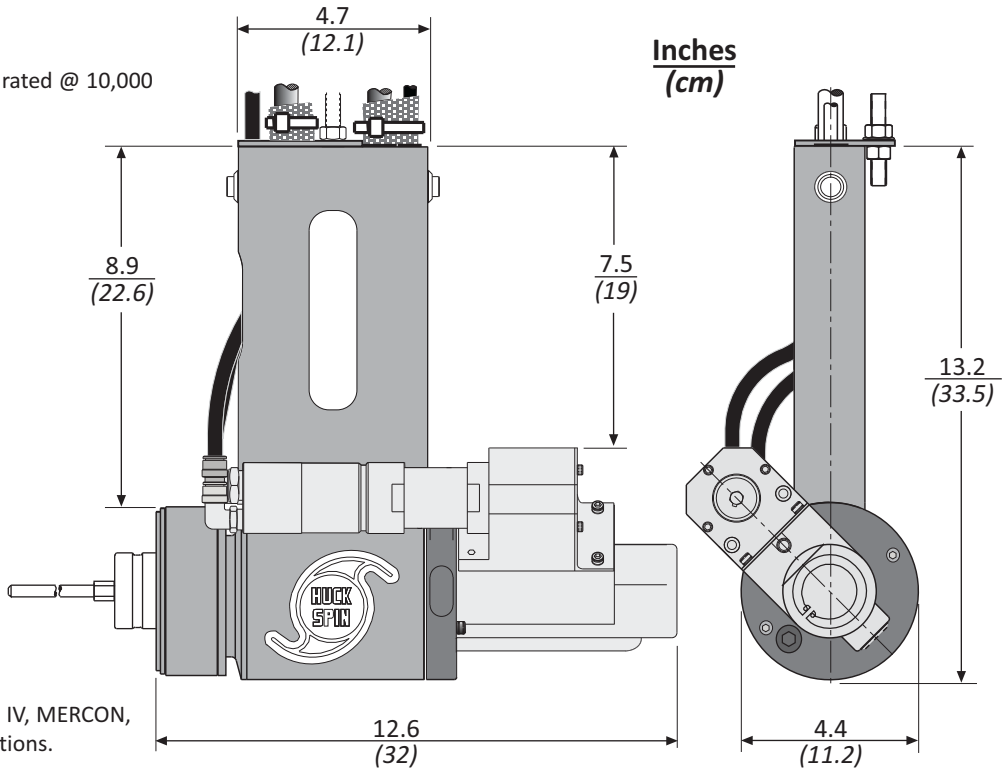
MAX RETURN PRESSURE:
2,400 psi *(165 BAR)*

STROKE:
1.808 in. *(4.6 cm)*

WEIGHT:
17.5 lbs *(7.94 kg)*

HYDRAULIC FLUID:
ATF meeting DEXRON III, DEXRON IV, MERCON, Allison C-4 or equivalent specifications.

Fire resistant hydraulic fluid may also be used, and is required to comply with OSHA regulation 1926.302 paragraph (d): "the fluid used in hydraulic power tools shall be fire resistant fluid approved under schedule 30 of the US Bureau of Mines, Department of Interior, and shall retain its operating characteristics at the most extreme temperatures to which it will be exposed."



Preparation for Use

1. Use Huck Powerig® Hydraulic Unit, or equivalent, that has been prepared for operation per applicable instruction manual. Check both PULL and RETURN pressures and, if required, adjust to pressures given in **Specifications** section of this manual.

WARNING: Correct PULL and RETURN pressures are required for operator's safety and for Installation Tool's function. HUCK Pressure Gauge T-124883CE is available for checking pressures. See Tool SPECIFICATIONS and Gauge Instruction Manual. Failure to verify pressures may result in severe personal injury.

2. First, turn hydraulic unit to OFF, and then, disconnect power supply from unit. Connect tool hoses to unit.

WARNING: Be sure to connect Tool's hydraulic hoses to POWERIG Hydraulic Unit before connecting Tool's switch control cord to unit. If not connected in this order and disconnected in the reverse order, severe personal Injury may occur.

3. Connect tool control switch electrical cord to hydraulic unit.
4. Connect hydraulic unit to power supply. Turn unit to ON. Hold tool trigger depressed for 30 seconds; depress trigger a few times to cycle tool and to circulate hydraulic fluid. Observe action of tool and check for leaks. Turn unit to OFF.
5. Select nose assembly for fastener to be installed. Disconnect tool control switch electrical cord from hydraulic unit; disconnect unit from power supply. Attach nose assembly to tool.
6. Reconnect hydraulic unit to power supply. Reconnect tool switch control cord to unit. Check operation of nose assembly; install fasteners in test plate of correct thickness with proper size holes. Inspect installed fasteners. If fasteners do not pass inspection, see **Troubleshooting** to locate and correct tool malfunction.

Installation Sequence

1. Operator positions Huck-Spin collar onto mating Huck-Spin pin threads by hand.
2. Huck-Spin tool thimble threads onto fastener. Air motor turns on and, if only Limit Switch 1 is reached, snub routine begins in which collar is partly swaged, then thimble spins on further until Limit Switch 2 is closed.
3. At full pressure, tool swages collar.
4. After swage, anvil is ejected off collar, and thimble spins off fastener, resulting in all tool components returning to their home positions.
5. Tool is ready to install next Huck-Spin fastener.

MAINTENANCE

GOOD SERVICE PRACTICES

CAUTION: ***Keep dirt and other harmful material out of hydraulic system, which includes tool, hoses, couplers and POWERIG Hydraulic Unit. Parts must be kept away from unclean work surfaces. Dirt in hydraulic system causes valve failure in hydraulic unit. Individual parts must be handled carefully and examined for damage or wear. Replace parts where required. Always replace O-rings and Back-up Rings when tool is disassembled for any reason.***

WARNING: Inspect tool for damage or wear before each use. Do not operate if damaged or worn, as severe personal injury may occur.

- The efficiency and life of your tool depends on proper maintenance. Using the manual will help give a clear understanding of the tool and basic maintenance procedures. Please read this section completely before proceeding with maintenance and repair. Use proper hand tools in a clean and well-lighted area. Only standard hand tools are required in most cases. Where a special tool is required, the description and part number are given.

- While clamping tool or parts in a vise, and when parts require force, use suitable soft materials to cushion impact. For example, using a half-inch brass drift, wood block and vise with soft jaws greatly reduces possibility of damaging tool. Remove components in a straight line without bending, cocking or undue force. Reassemble tool with the same care.

- Consult **TROUBLESHOOTING** section of this manual if a malfunction occurs and then see appropriate **ASSEMBLY** and/or component illustration sections.

Sealants, Lubricants, Hydraulic Fluid & Service Kits

- Use automatic transmission fluid DEXRON®* III or equivalent. ***Fire resistand hydraulic fluid must be used to comply with OSHA regulation 1926.302 paragraph (d).*** An optional fire resistand fluid that may be used is Quintolubric®* 822-220. Fluid viscosity 300 SUS @ 100°F and 50 SUS at 210°F is recommended for ambient temperatures 0° to 130° F.

- Rub Slic-Tite®* with PTFE thread compound, or equivalent, on pipe plug threads and quick connect fitting. **CAUTION: Do not use TEFLON®* tape on pipe threads. Pipe threads may cause tape to shred resulting in tool malfunction. (Slic-Tite is available in stick form as Huck P/N 503237.)**

- Smear LUBRIPLATE® 130AA*, or equivalent lubricant, on O-Rings and mating surfaces to aid assembly and to prevent damage to O-Rings. (LUBRIPLATE 130-AA is available in a tube as Huck P/N 502723.)

- Each Service Kit contains perishable parts for your specific tool. As foreseeable use may indicate, keep extra kits (O-rings, Back-up Rings, other standard items) and tool parts in stock. When stock is depleted, you can get kit items from any regular retailer of these items. See kit parts list for: O-ring size (AS568- number); material; durometer. For kit parts lists and related information, see General Notes.

* *DEXRON is a registered trademark of General Motors Corp.*
Quintolubric is a registered trademark of Quaker Chemical Corp.
Slic-Tite is a registered trademark of LA-CO Industries, Inc.
TEFLON is a registered trademark of DuPont Corp.
LUBRIPLATE is a registered trademark of Fiske Brothers Refining Co.

PREVENTIVE MAINTENANCE

System Inspection

Operating efficiency of the tool is directly related to the performance of the complete system, including the tool with nose assembly, hydraulic hoses, trigger switch and control cord, and POWERIG Hydraulic Unit. Therefore, an effective preventive maintenance program includes scheduled inspections of the system to detect and correct minor troubles. At the beginning of each shift/day:

- Inspect tool and nose assembly for external damage.

- Verify that hydraulic hose fittings, couplings, and electrical connections are secure.

- Inspect hydraulic hoses for damage and deterioration. Do not use hoses to carry tool. Replace hoses if damaged.

- Observe tool, hoses, and hydraulic unit during operation to detect abnormal heating, leaks, or vibration.

- Max contamination level: NAS 1638 class 9, or ISO CODE 18/15, or SAE level 6.

POWERIG Hydraulic Unit Maintenance

Refer to the applicable POWERIG instruction manual.

Tool Maintenance

Whenever disassembled and also at regular intervals (depending on severity and length of use), replace all seals, wipers, and back-up rings in tool. Service Kits, hoses, and extra parts should be kept in stock. Inspect cylinder bore, pistons, and piston rods for scored surfaces and excessive wear or damage. Replace as necessary. **Always replace seals, wipers, and back-up rings, and always grease gears whenever the tool is disassembled for any reason.**

Nose Assembly Maintenance

Clean nose assembly often. Dip in mineral spirits or similar solvent to clean puller and wash away metal chips and debris. At regular intervals, as experience shows, disassemble nose and use a sharp "pick" to remove imbedded particles from grooves of puller.

System Set-up

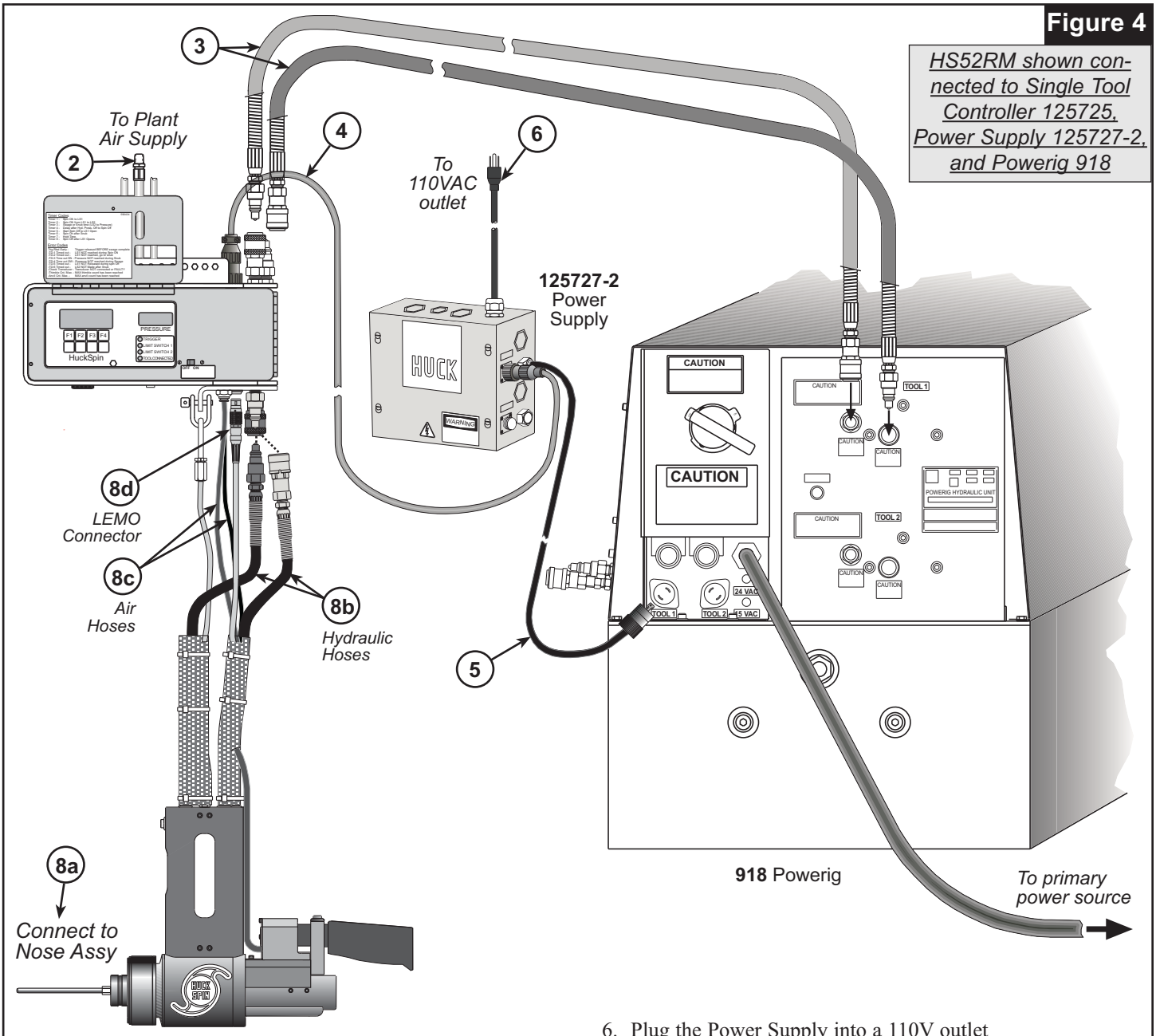


Figure 4

HS52RM shown connected to Single Tool Controller 125725, Power Supply 125727-2, and Powerig 918

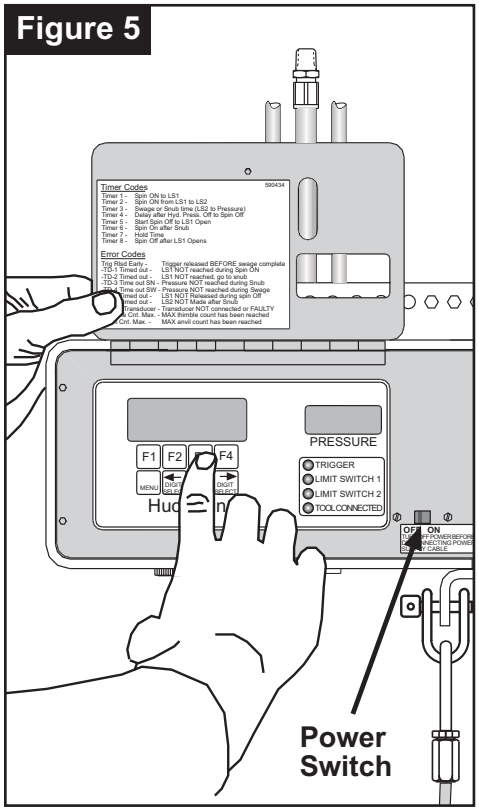
1. Set pressures on Powerig hydraulic unit using Powerig instruction manual.
2. Connect primary air source to air fitting at top of Controller.
3. Connect hydraulic hoses from Controller to the Powerig.
4. Plug electrical cable from Controller to Power Supply.
5. Plug power supply to powerig. **NOTE: Be sure to connect "TOOL 1" from the Power Supply to the "TOOL 1" receptacle on the Powerig or "TOOL 2" to "TOOL 2".**
6. Plug the Power Supply into a 110V outlet
7. Adjust tool settings on the Single Tool Controller (Fig. 5) for an HS52 with a 5/8 fastener by following instructions provided in the Controller manual, then set swage pressure on Single Tool Controller to 5,800psi.
8. Install Nose Assembly to the Tool, and attach Tool to the Single Tool Controller by connecting the hydraulic connectors, the air lines, and the Electric Cable Assembly. The system will then be ready for the Installation Sequence.
9. Turn on Powerig hydraulic unit.

Pressure Settings

These pressures are for Low Swage Anvils, which can be identified by a step on the inside bore. Previous designs of anvils have a straight bore without any steps and will require higher pressures.

These pressure values are only a starting point for setting the Powerig. Many factors will cause these pressures to be higher or lower which can include: tool condition, hose length, oil temperature and fasteners being installed.

Figure 5



Small Diameter HuckSpin (Inch)

Fastener	Si" e	Nose	Style	Tool	Notes
HS	-8 (1/4")	99-7300	Installation - Long	HS7	----------
HS	-10 (5/16")	99-7301	Installation - Standard	HS7	----------
HS	-10 (5/16")	99-7304	Installation - Long	HS7	----------
HS	-12 (3/8")	99-7302	Installation - Standard	HS7	----------
HS	-12 (3/8")	99-7303	Installation - Long	HS7	----------
HS	-10 (5/16")	99-7506	Installation - Standard	2580	----------
HS	-10 (5/16")	99-7506CC	Removal	2580	----------
HS	-12 (3/8")	99-7609	Installation - Short	HSSFT-M10	----------
HS	-12 (3/8")	99-7610	Installation - Long	HSSFT-M10	----------

Large Diameter HuckSpin (Inch)

Fastener	Si" e	Nose	Style	Tool	Notes
HS	-16 (1/2")	99-7330	Installation - Long	HS24	----------
HS	-20 (5/8")	99-7331	Installation - Long	HS24	----------
HS	-16 (1/2")	99-7312-1	Installation - Standard	HS37	----------
HS	-16 (1/2")	99-7307-1	Installation - Long	HS37	----------
HS	-16 (1/2")	99-7308-1	Installation - Short	HS52	----------
HS	-16 (1/2")	99-7309-1	Installation - Long	HS52	----------
HS	-16 (1/2")	99-7306-1	Installation - Standard	HS52	HS37 DIA ANVIL
HS	-16 (1/2")	99-7313-1	Installation - Standard	HS52	----------
HS	-16 (1/2")	99-7550CC	Removal	HS52	----------
HS	-20 (5/8")	99-7315-1	Installation - Standard	HS52	----------
HS	-20 (5/8")	99-7551CC	Removal	HS52	----------
HS	-20 (5/8")	99-7316-1	Installation - Short	HS52	----------
HS	-20 (5/8")	99-7317-1	Installation - Long	HS52	----------
HS	-20 (5/8")	99-7318-1	Installation - Extra Long	HS52	----------
HS	-24 (3/4")	99-7314-1	Installation - Standard	HS52	----------
HS	-24 (3/4")	99-7553CC	Removal	HS52	----------
HS	-32 (1")	99-7321	Installation - Short	HS52	----------
HS	-32 (1")	99-7322	Installation - Standard	HS52	----------
HS	-32 (1")	99-7323	Installation - Short	HS52	HS Pin & BT Collar
HS	-16 (1/2")	99-7600	Installation - Standard	HSSFT-M12	----------
HS	-20 (5/8")	99-7602	Installation - Standard	HSSFT-M16	----------
HS	-20 (5/8")	99-7602CC	Removal	HSSFT-M16	----------
HS	-20 (5/8")	99-7602-5	Installation - Standard	HSSFT-M16	----------
HS	-16 (1/2")	99-7500	Installation - Standard	2624HS/3585PT	----------
HS	-16 (1/2")	99-7500CC	Removal	2624HS/3585PT	----------
HS	-20 (5/8")	99-7501	Installation - Standard	2624HS/3585PT	----------
HS	-20 (5/8")	99-7501CC	Removal	2624HS/3585PT	----------
HS	-24 (3/4")	99-7503	Installation - Standard	2624HS/3585PT	----------
HS	-24 (3/4")	99-7503CC	Removal	2624HS/3585PT	----------

Large Diameter HuckSpin (Metric)

Fastener	Si" e	Nose	Style	Tool	Notes
HS	12mm	99-7430	Installation - Long	HS24	----------
HS	16mm	99-7331	Installation - Long	HS24	----------
HS	12mm	99-7412-1	Installation - Standard	HS37	----------
HS	14mm	99-7414-1	Installation - Standard	HS37	----------
HS	14mm	99-7416-1	Installation - Short	HS37	----------
HS	12mm	99-7413-1	Installation - Standard	HS52	----------
HS	14mm	99-7415-1	Installation - Standard	HS52	----------
HS	14mm	99-7561CC	Removal	HS52	----------
HS	16mm	99-7315-1	Installation - Standard	HS52	----------
HS	16mm	99-7551CC	Removal	HS52	----------
HS	16mm	99-7316-1	Installation - Short	HS52	----------
HS	16mm	99-7317-1	Installation - Long	HS52	----------
HS	16mm	99-7318-1	Installation - Extra Long	HS52	----------
HS	20mm	99-7418-1	Installation - Standard	HS52	----------
HS	20mm	99-7562CC	Removal	HS52	----------
HS	12mm	99-7700	Installation	HSSFT-M12	----------
HS	14mm	99-7702	Installation - Standard	HSSFT-M16	----------
HS	14mm	99-7702-4	Installation - Long	HSSFT-M16	----------
HS	16mm	99-7602	Installation - Standard	HSSFT-M16	----------
HS	16mm	99-7602CC	Removal	HSSFT-M16	----------
HS	16mm	99-7602-5	Installation - Long	HSSFT-M16	----------
HS	12mm	99-7510	Installation - Standard	2624HS/3585PT	----------
HS	12mm	99-7510CC	Removal	2624HS/3585PT	----------
HS	14mm	99-7511	Installation - Standard	2624HS/3585PT	----------
HS	14mm	99-7511CC	Removal	2624HS/3585PT	----------
HS	16mm	99-7501	Installation - Standard	2624HS/3585PT	----------
HS	16mm	99-7501CC	Removal	2624HS/3585PT	----------
HS	20mm	99-7512	Installation - Standard	2624HS/3585PT	----------
HS	20mm	99-7512CC	Removal	2624HS/3585PT	----------

Start-up and Operation

INSTALLING A HUCK-SPIN FASTENER

1. Place the Huck-Spin bolt through the workpieces, ensuring that it is the proper grip length for the workpiece thicknesses to be fastened.
2. Screw a matching size Huck-Spin collar onto the bolt threads projecting throught the workpieces, and hand-tighten until the flange of the collar bears against the workpiece surface.
3. Use the handle(s) of the installation tool to guide it toward the workpiece and locate the tool's nose assembly onto the end of the bolt. (Figure 6) ***Do not force the tool onto the bolt!***

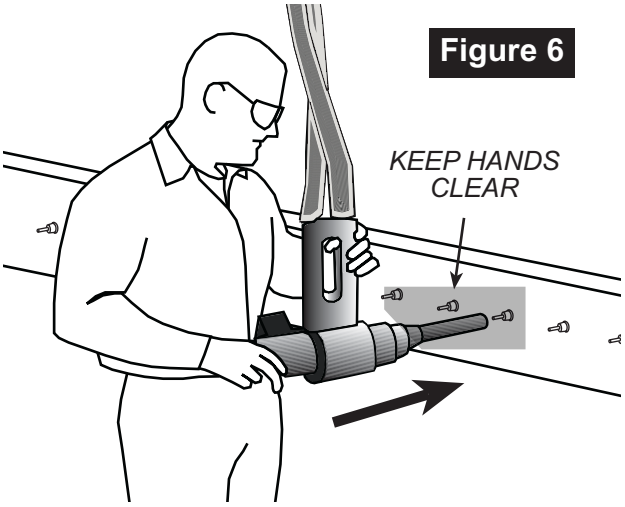


Figure 6

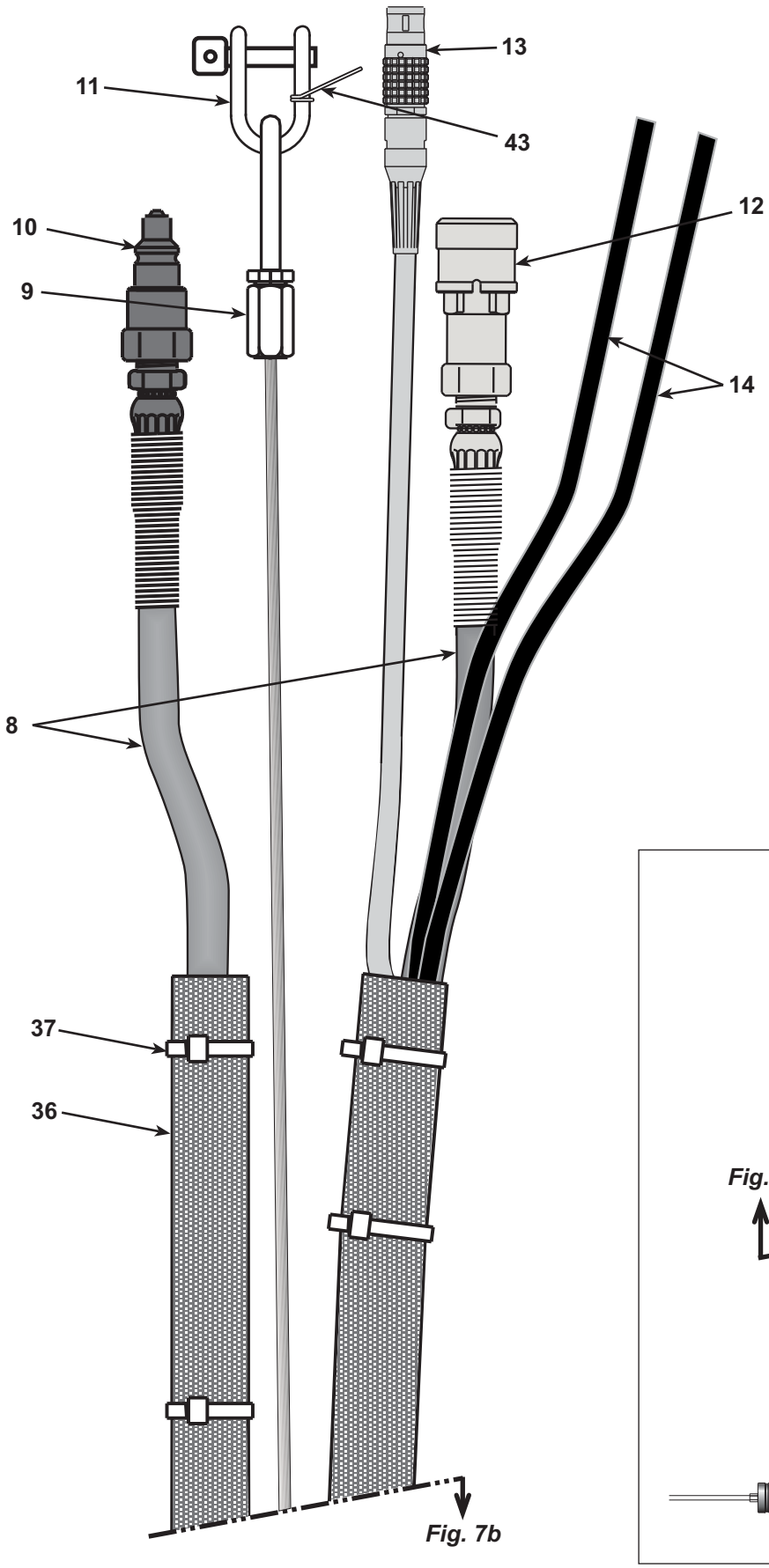
WARNING - During fastener installation, the tool will align itself with the axis of the bolt and will move toward the workpiece surface. To avoid personal injury, keep hands clear of all spaces between the tool and the workpiece and between the workpieces themselves.

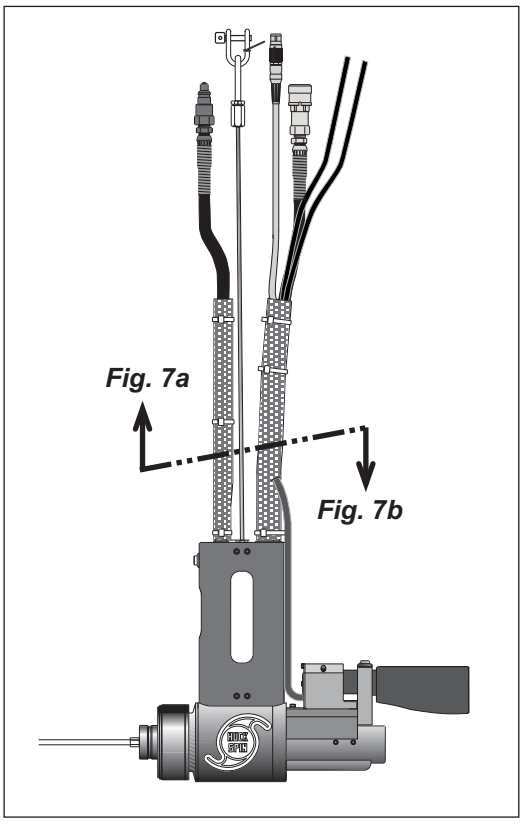
4. While maintaining alignment of the tool's nose assembly with the bolt, to avoid cross-threading the nose assembly's thimble onto the bolt, depress and hold the tool trigger. The installation cycle will start. ***Except in an emergency or difficulty, do not release the trigger until the installation cycle is complete and the tool is released from the installed fastener. If the tool trigger is released before the installation cycle is complete, the fastener may not be properly installed and the system alarm will sound.***

NOTE: For safety reasons, whenever the trigger is released during any phase of the installation cycle, the tool automatically reverses and removes itself from that fastener.

5. Visually inspect the installed fastener for completeness of swage. Compare the measured "last pressure seen" recorded by the pressure transducer to the desired full-swage pressure setting. If the last pressure equals or slightly exceeds the default setting, a correct installation should have occurred. If unsure, measure the installed fastener with the swage gage P/N HG-S-HS(*), or install a similar fastener into a clamp-load measuring device, such as a skidmore-wilhelm unit, and observe the installed clamp reading.

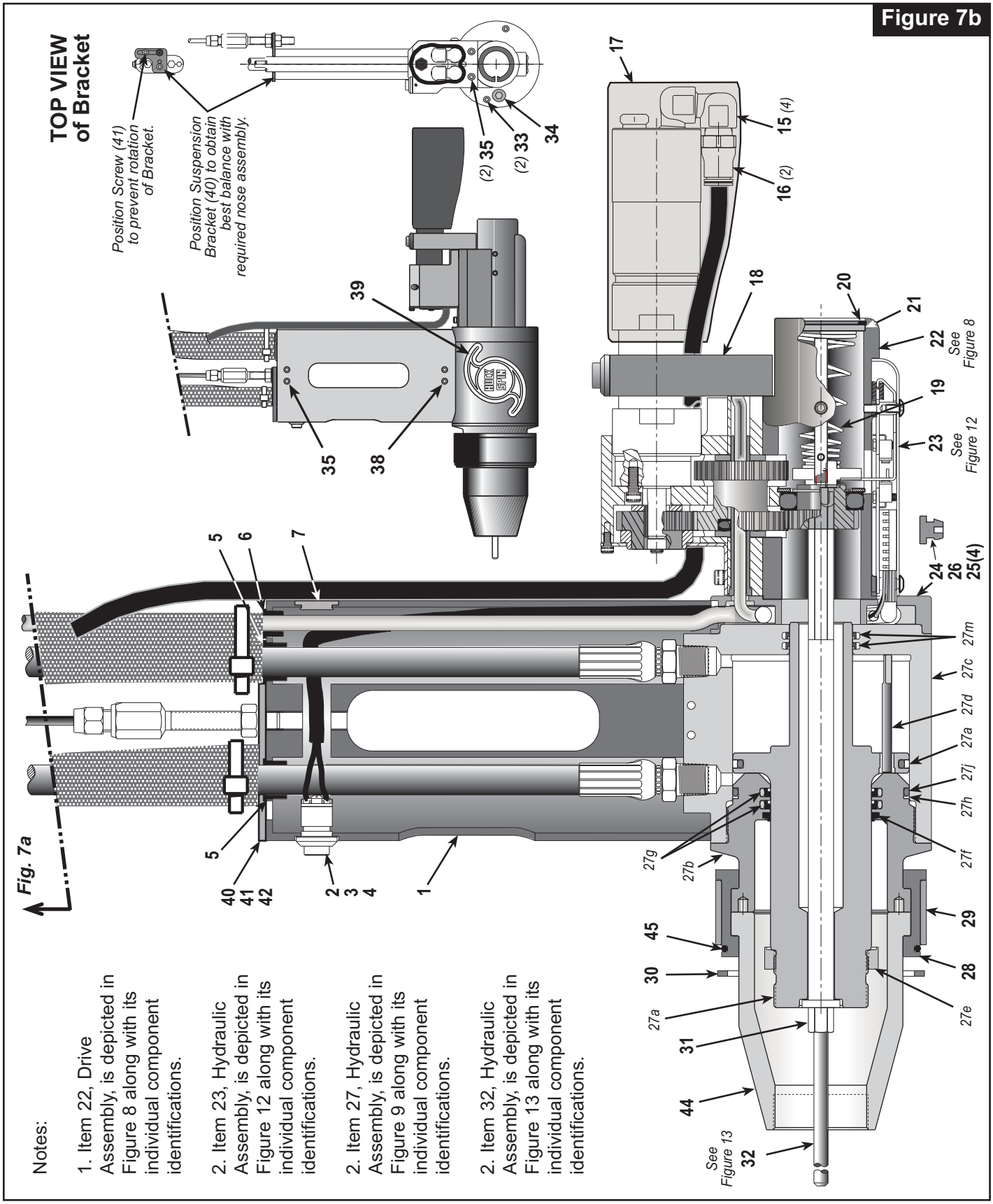
Figure 7a





HS52RM □ HS52RM-1-1-0 □ HS52RM-1-1-50

Figure 7b



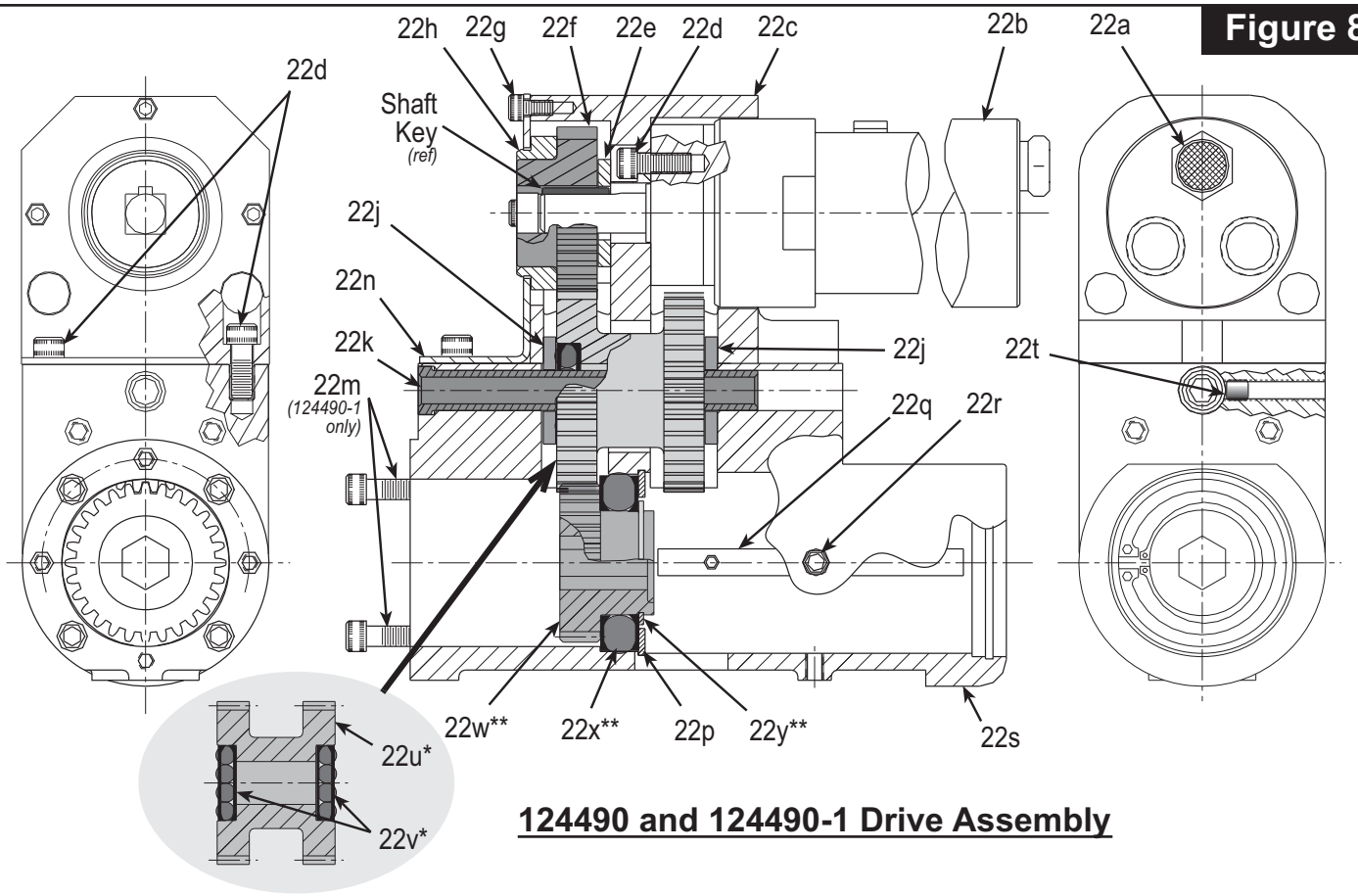
Notes:

1. Item 22, Drive Assembly, is depicted in Figure 8 along with its individual component identifications.
2. Item 23, Hydraulic Assembly, is depicted in Figure 12 along with its individual component identifications.
2. Item 27, Hydraulic Assembly, is depicted in Figure 9 along with its individual component identifications.
2. Item 32, Hydraulic Assembly, is depicted in Figure 13 along with its individual component identifications.

Tool Assembly Parts List (Figures 7a, 7b, 8-13)

ITEM	DESCRIPTION	HS52RM	HS52RM-1-1-0	HS52RM-1-1-50	QTY
1	Handle	121450			1
2	Trigger	120360			1
3	Electric Cord	505792			20 in.
4	Butt Splice	506817			2
5	Snap Bushing	506101			2
6	Snap Bushing	506100			1
7	Handle Plug	124415			1
8	Hydraulic Hose	123642		123642-50	2
9	Suspension Cable Assembly	123615-2		123615-3	1
10	Hydraulic Coupling, male	110438			1
11	Shackle	506609	507040		1
12	Hydraulic Coupling, female	110439			1
13	Control Cable Assembly	124084-60		124084-74	1
14	Twin Tubing	506606			7 ft.
15	Street Elbow	506485			4
16	Tube Connector	505179			2
17	Heat Shrink Tubing	506631			5
18	Trigger Assembly	124110			1
19	Conical Spring	121520			1
20	Retaining Ring	500954			1
21	End Plate	121447			1
22	Drive Assembly (See Figure 8)	124490	124490-1		1
23	Switch Assembly (See Figure 12)	124240			1
24	Rubber Plug	506815			2
25	Flat Head Screw 8-32 X 1/2	505588			4
26	Drive Mounting Flange	121529			1
27	Hydraulic Assembly (See Figure 10)	121453			1
28	Split Ring	101577			1
29	Sleeve	101578			1
30	Retaining Ring	502900			1
31	Drive Shaft	121491			1
32	Actuator Rod Assembly (See Figure 13)	121441			1
33	Screw 10-32 X 3/4	500103			2
34	Pipe Plug	502375			1
35	Screw 10-32 X 1-1/4	500106			4
36	Hose Sleeving	123724-2		123724-3	2
37	Tie Wrap	503541			6
38	Screw 10-32 X 1/2	500101			4
39	HuckSpin Logo Label	590295			2
40	Suspension Bracket	n/a	123626		1
41	Screw	n/a	500134		2
42	Hex Nut	n/a	500237		1
43	Locking Wire	n/a	507041		1 ft.
44	Anvil Adapter	n/a	121406		1
45	O-Ring	n/a	504646		1

Figure 8



124490 and 124490-1 Drive Assembly

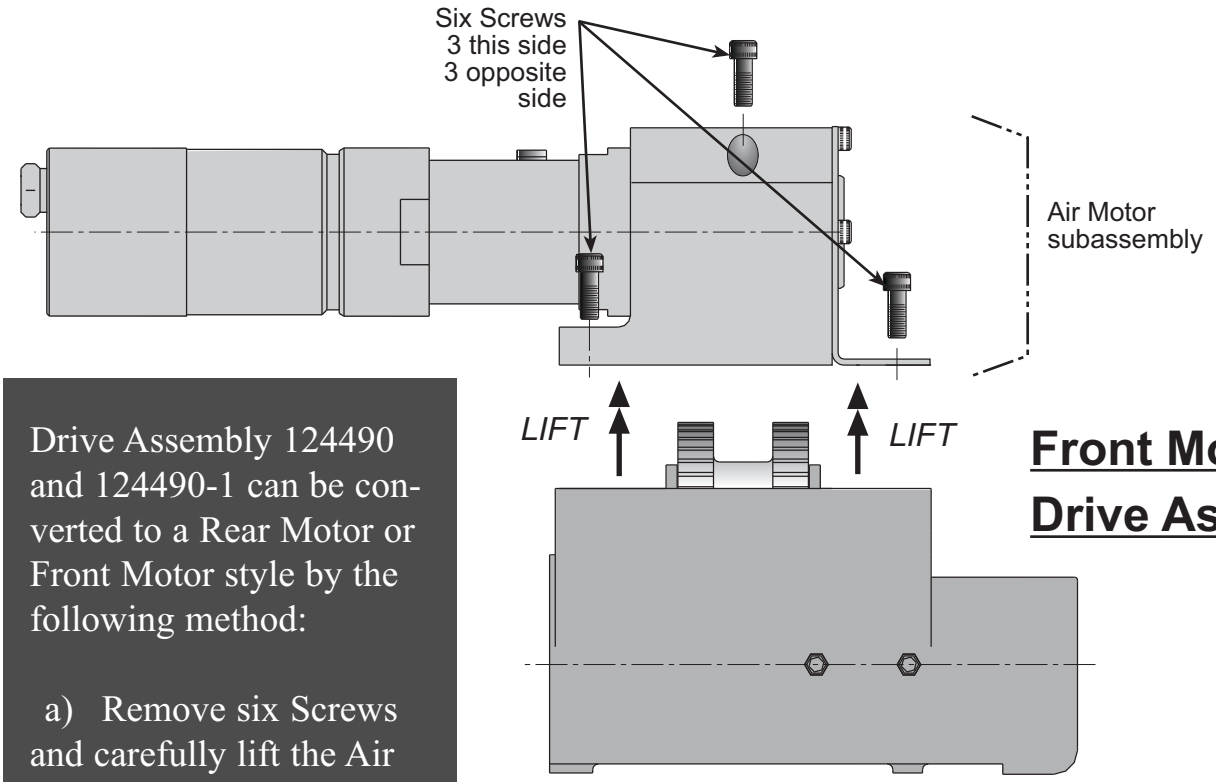
ITEM NO.	DESCRIPTION	124490 (HS52RM)	124491-1 (HS52RM-1-1-0 HS52RM-1-1-50)	QTY
22a	Muffler, 1/4 NPT	506476	506476	1
22b	Air Motor	121474	121474-1	1
22c	Motor Mount	121405	121405	1
22d	Screw, 10-32 X 1/2L	500101	500101	10
22e	Spacer	121429-2	121429-2	1
22f	External Drive Gear	123741	123741	1
22g	Screw, 6-32 X 1/4L	500047	500047	3
22h	Drive Gear Bushing	121414	121414	1
22j	Spacer	121429-1	121429-1	2
22k	Shaft	123723	123723	1
22m	Screw 10-32 X 5/8L	n/a	500102	4
22n	Gear Cover	121527	121527	1
22p	Retaining Ring	500953	500953	1
22q	Actuator Disk Key	121413	121413	1
22r	Screw, 6-32 X 5/16L	506058	506058	2
22s	Central Housing	123631	123631	1
22t	Socket Head Screw 10-32 X 1/4L	505603	505603	1
22u*	Intermediate Gear	121440	121440	1
22v*	Ball Bearing	506053	506053	2
22w**	Internal Drive Gear	127669	127669	1
22x**	Ball Bearing	506057	506057	1
22y**	Retaining Ring	501495	501495	1

Note: Figure 8 depicts the Rear Motor (RM) version of the tools. See Figure 9 on the following page for other mounting options.

* Intermediate Gear (**22u**) and Ball Bearing (**22v**) are available as assembly Huck P/N 121442.

** Internal Drive Gear (**22w**), Ball Bearing (**22x**), and Retaining Ring (**22y**) are available as assembly Huck P/N 127670.

Figure 9

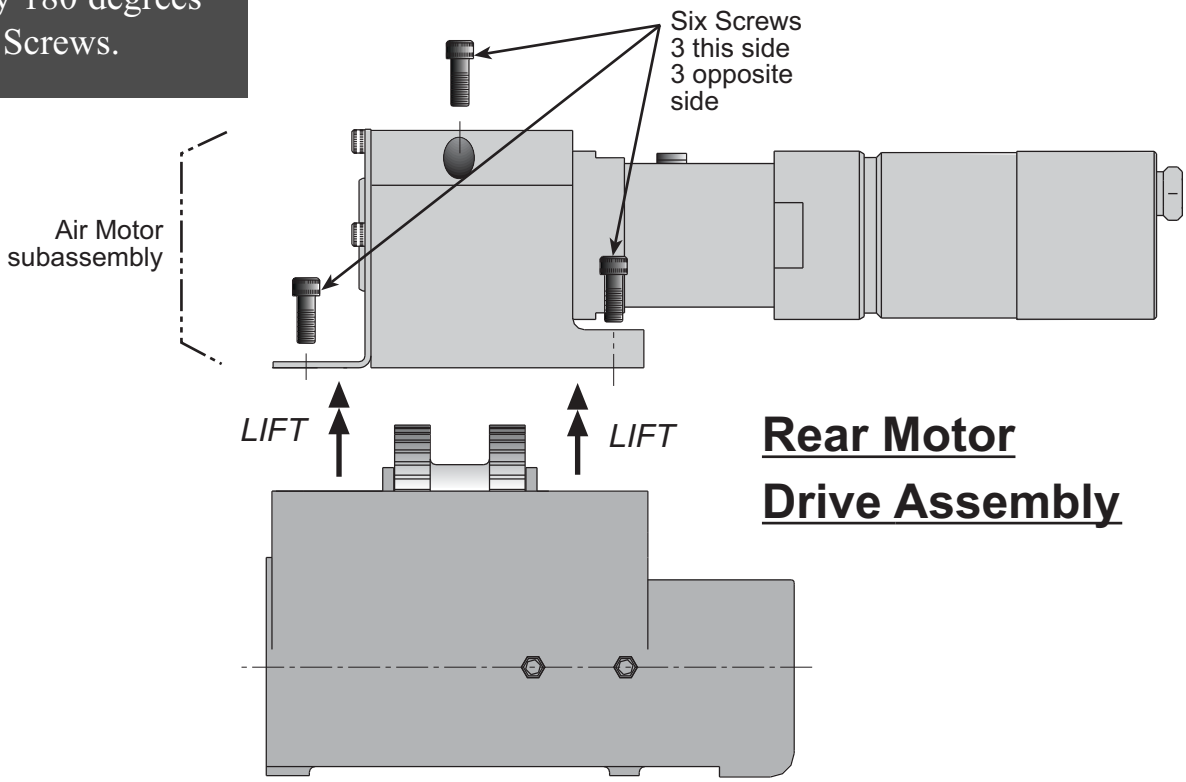


Front Motor Drive Assembly

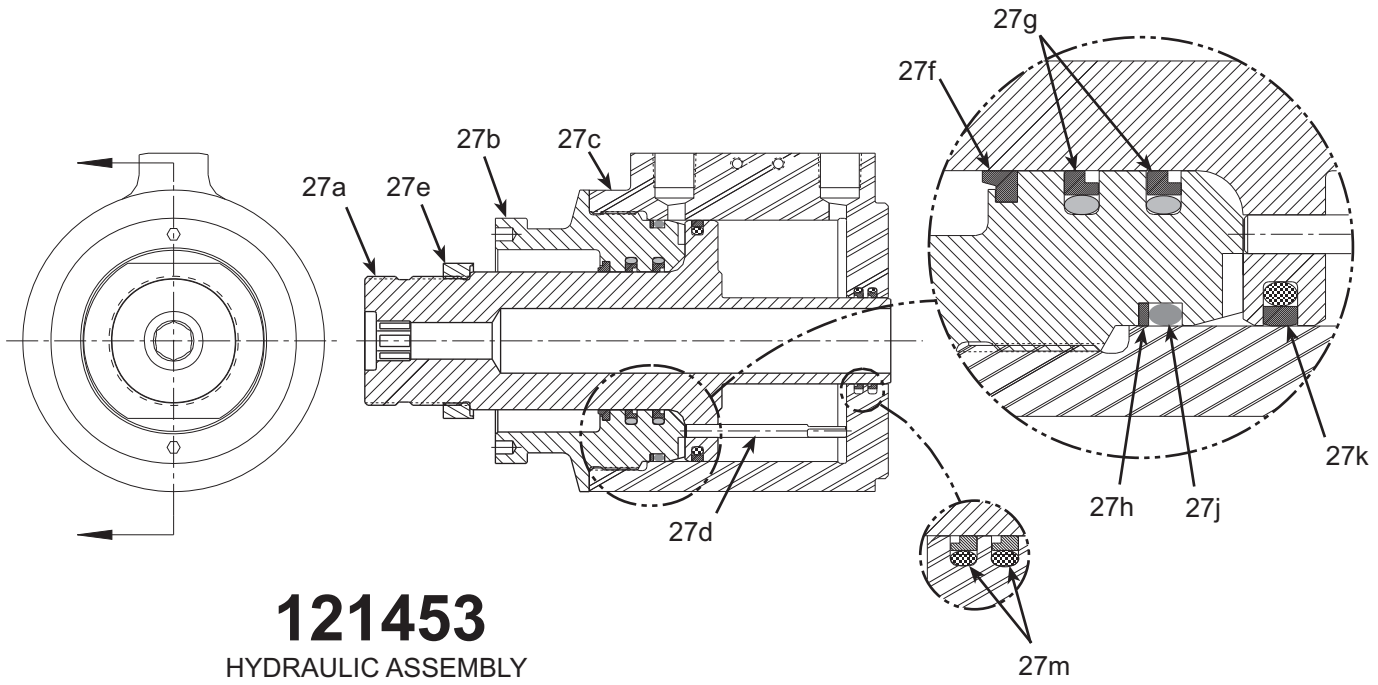
Drive Assembly 124490 and 124490-1 can be converted to a Rear Motor or Front Motor style by the following method:

a) Remove six Screws and carefully lift the Air Motor subassembly.

b) Turn the Air Motor subassembly 180 degrees and replace Screws.



Rear Motor Drive Assembly



121453
HYDRAULIC ASSEMBLY

Figure 10

ITEM NO.	DESCRIPTION	PART NO.	QTY
27a	Piston & Seal Assembly (see figure below)	121452	1
27b*	Cylinder End Cap	121400	1
27c	Cylinder	121402	1
27d	Dump Valve	121427	1
27e	Wrenching Ring	124176	1
27f*	Wiper	506068	1
27g*	Stepseal	506092	2
27h*	Back-up Ring	501163	1
27j*	O-ring	503859	1
27k	GLYD Ring Seal (see figure below)	506093	REF
27m	Stepseal	506094	2

* Items **27b**, **27f**, **27g**, **27h**, and **27j** may be purchased together as End Cap Assembly part no. 124422.

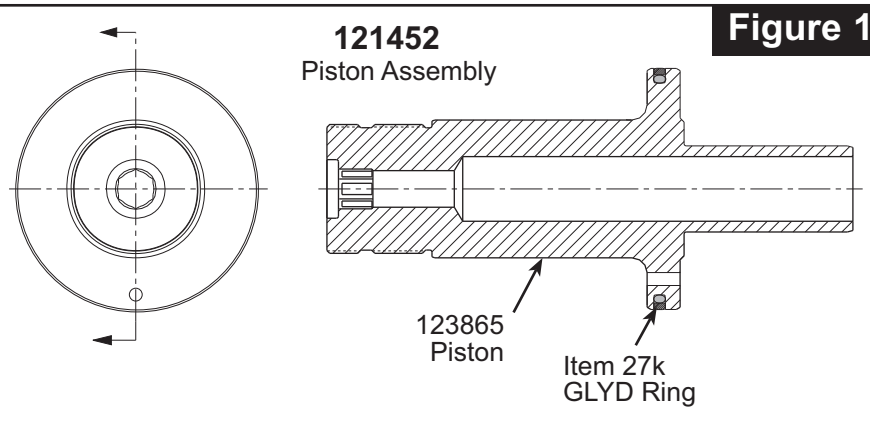
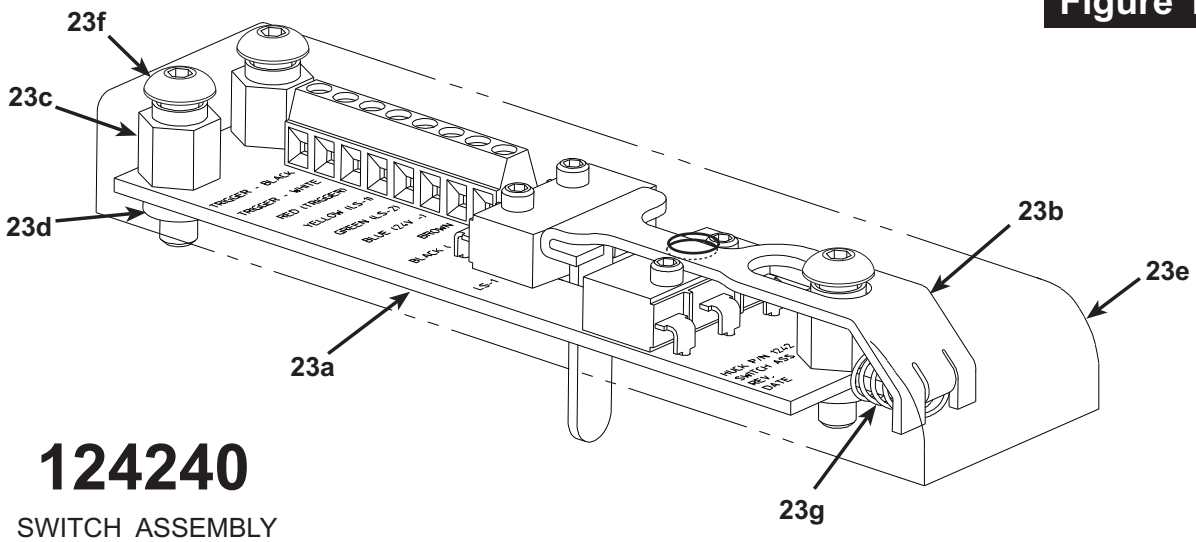


Figure 11

Note:
Piston and GLYD Ring are available separately along with GLYD Ring Compressor part no. 123496. ***GLYD Ring must be compressed into Piston groove with GLYD Ring Compressor if parts are purchased separately.***

Figure 12

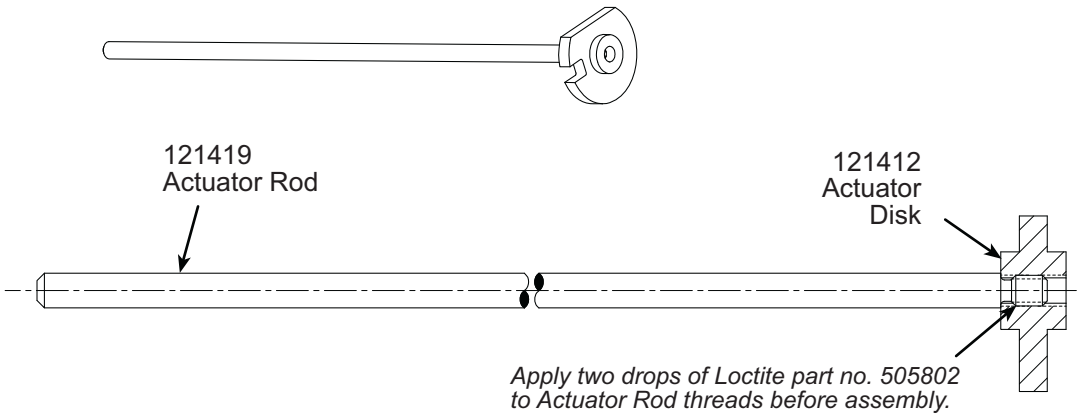


124240

SWITCH ASSEMBLY

ITEM NO.	DESCRIPTION	PART NO.	QTY
23a	Printed Circuit Board Assembly	124232	1
23b	Switch Actuator Slide	124233	1
23c	Standoff	124234	3
23d	Spacer	124235	3
23e	Cover	124236	1
23f	Button Head Cap Screw 8-32 X .25	502471	3
23g	Compression Spring	506650	1

Figure 13

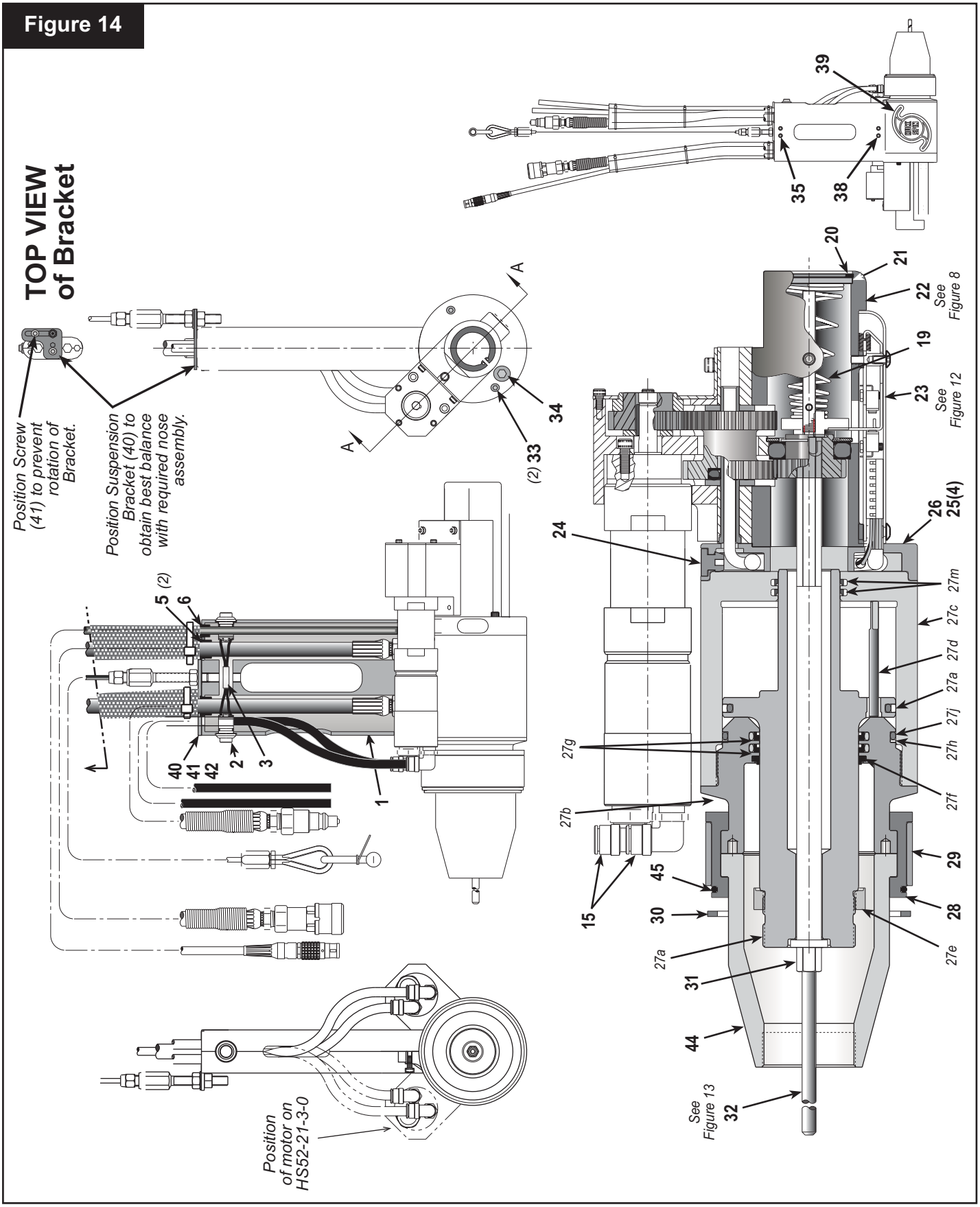


121441

ACTUATOR DISK AND ROD ASSEMBLY

HS52-21-0-3-0 ▯ HS52-81-0-2-0 ▯ HS52-81-0-3-0 ▯ HS52-81-0-3-50

Figure 14



Tool Assembly Parts List (Figures 7a, 7b, 8-13)

ITEM	DESCRIPTION	HS52-21-0-3-0	HS52-81-0-2-0	HS52-81-0-3-0	HS52-81-0-3-50	QTY
1	Handle	121453				1
2	Trigger	120360 QTY: 2	120360 QTY: 1	120360 QTY: 2		←
3	Electric Cord	505792				25 in.
4						
5	Snap Bushing	506101				2
6	Snap Bushing	506100				1
7						
8	Hydraulic Hose	123642			123642-50	2
9	Suspension Cable Assembly	123615-2			123615-3	1
10	Hydraulic Coupling, male	110438				1
11	Shackle	507040				1
12	Hydraulic Coupling, female	110439				1
13	Control Cable Assembly	124084-60		124084-74		1
14	Twin Tubing	506606 QTY: 6 ft. 2-1/8 in.		506606 QTY: 8 ft. 2-1/8 in.		←
15	Elbow 3/8 X 1/4 NPT	506677				2
16						
17						
18						
19	Conical Spring	121520				1
20	Retaining Ring	500954				1
21	End Plate	121447				1
22	Drive Assembly (See Figure 8)	124490-1				1
23	Switch Assembly (See Figure 12)	124240				1
24	Drive Mounting Flange	121529				1
25	Flat Head Screw 8-32 X 1/2	505588				4
26	Rubber Plug	506815				2
27	Hydraulic Assembly (See Figure 10)	121453				1
28	Split Ring	101577				1
29	Sleeve	101578				1
30	Retaining Ring	502900				1
31	Drive Shaft	121491				1
32	Actuator Rod Assembly (See Figure 13)	121441				1
33	Screw 10-32 X 3/4	500103				2
34	Pipe Plug	502375				1
35	Screw 10-32 X 1-1/4	500106				2
36	Hose Sleeving	123724-2		123724-3		2
37	Tie Wrap	503541				6
38	Screw 10-32 X 1/2	500101				4
39	HuckSpin Logo Label	590295				1
40	Suspension Bracket	123626				1
41	Screw	500134				2
42	Hex Nut	500237				1
43	Locking Wire	507041				1 ft.
44	Anvil Adapter	121406				1
45	O-Ring	504646				1

Disassembly

Carefully read all precautions in Safe Operation Section. This includes how to safely disconnect the tool from the power source before starting any maintenance. Refer to appropriate illustrations and general maintenance. The following procedure is for complete disassembly. Disassemble only those subassemblies necessary to check and replace worn and damaged components. ***Always replace seals, wipers, O-rings and back-up rings of disassembled subassemblies.***

Initial Disassembly Preparation

1. **Disconnect Tool from power source.**
2. Slide Sleeve off of Split Ring. Open Split Ring and remove Anvil Adapter. *(Figure 15)*
3. Remove Nose Assembly from tool, including Retaining Ring *(Item 30, Figures 7b & 14)*.

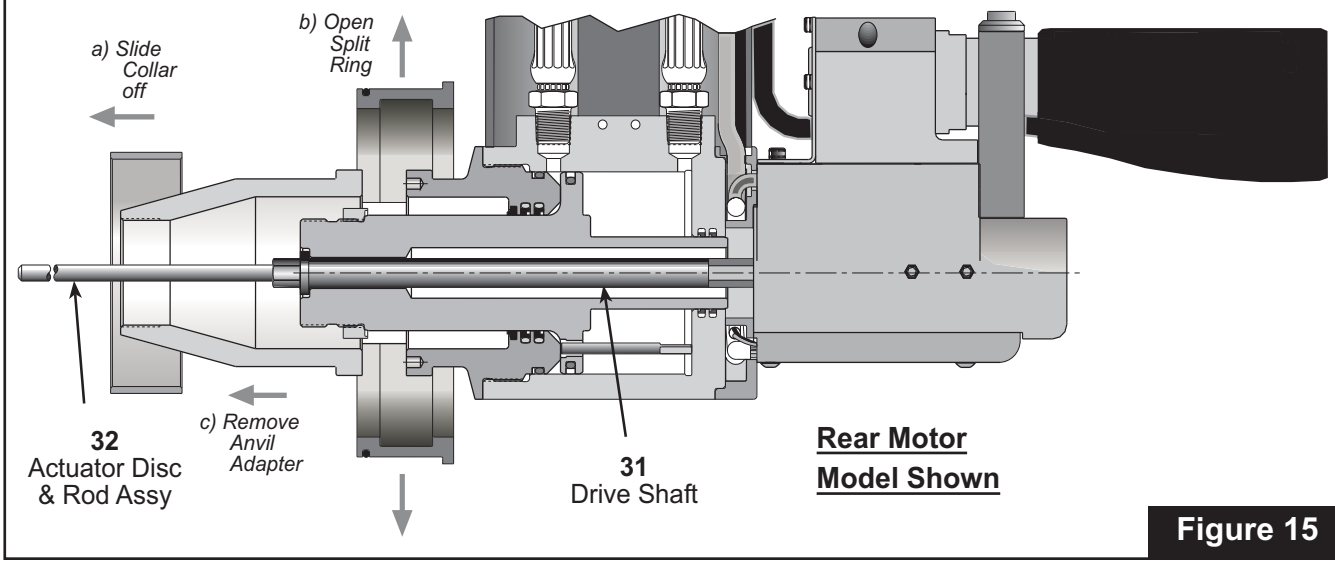

a) Slide Collar off
b) Open Split Ring
c) Remove Anvil Adapter
32 Actuator Disc & Rod Assy
31 Drive Shaft
Rear Motor Model Shown

Figure 15

Conical Spring; Actuator Rod; Drive Shaft

(Figures 15 & 16)

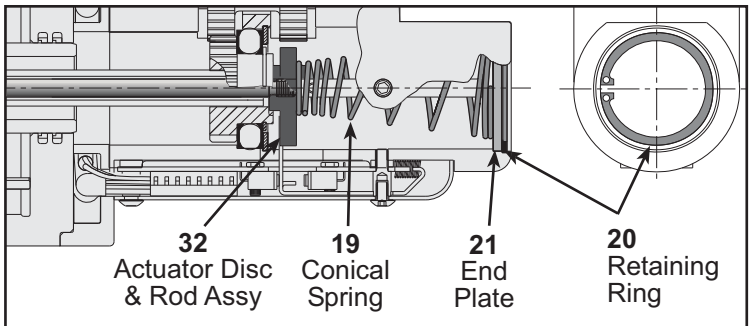
4. Point Housing in a safe direction and, while firmly pushing against End Plate (21) and Conical Spring (19), remove Retaining Ring (20). *(Figure 16)*

WARNING: Unless End Plate is held in firmly, severe personal injury may occur when Spring ejects forcibly from Housing.

5. Remove End Plate (21) and Spring (19) from central Gear Housing (22s).

6. Pull Actuator Disc and Rod Assembly (32) from rear of tool. *(Figure15)*

7. Pull Drive Shaft (31) from front of tool. *(Figure 15)*



Firmly push End Plate against Conical Spring while removing Retaining Ring to avoid forcible ejection! See WARNING.

Figure 16

Disassembly (continued)

Limit Switch *(Figure 17)*

8. While holding Switch Actuator Slide (23b) down using access hole *(Figure 17)*, unscrew three Screws (23f) from Switch Assembly Cover (23e).

9. Carefully lift Cover just enough to hold Switch Actuator Slide and Spring (23g) from ejecting suddenly.

10. Using a screwdriver, disconnect wires.

11. Unscrew three Standoffs (23c).

12. Remove Circuit Board (23a) and Spacers (23d).

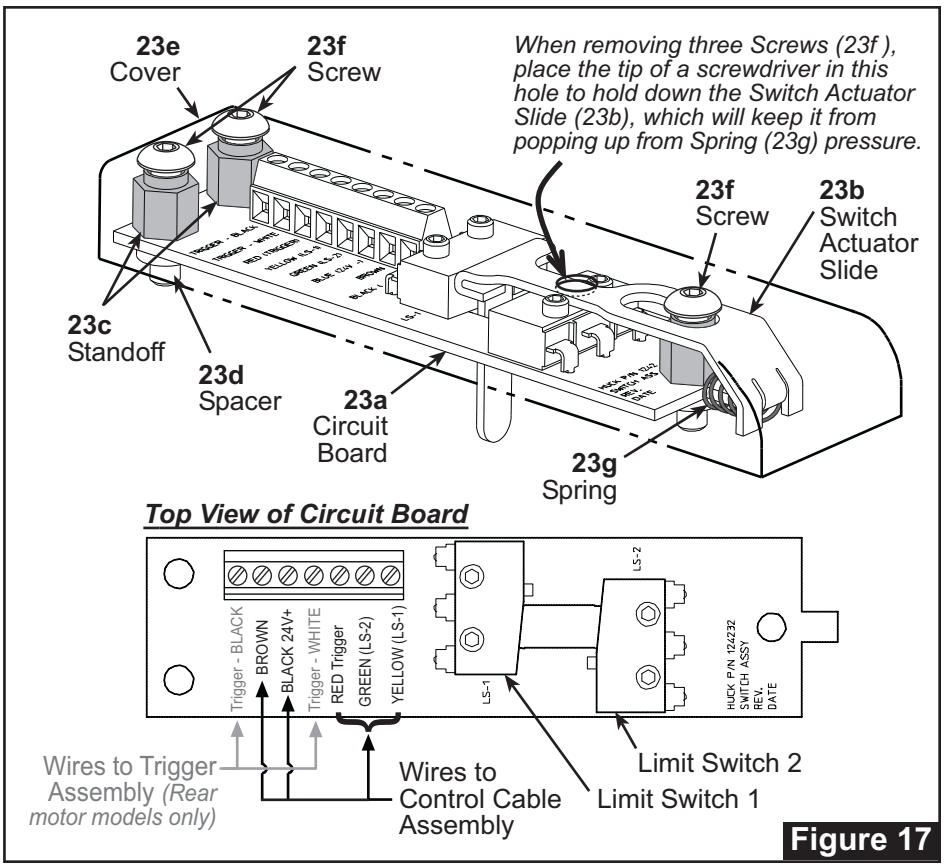


Figure 17

Drive Mounting Flange
(Figures 18-20)

13. Disconnect Air Tubes (14) from Fittings (Item 15 on front motor models, Item 16 on rear motor models). *(Figure 18)*

14. With hex key, remove both cap Screws (33) holding the Drive Mounting Flange (26) to the Cylinder (27c), and separate the two main subassemblies.

Air Motor Drive

15. Remove three Gear Cover Screws (22g) and two Motor Mount Screws (22d).

continued

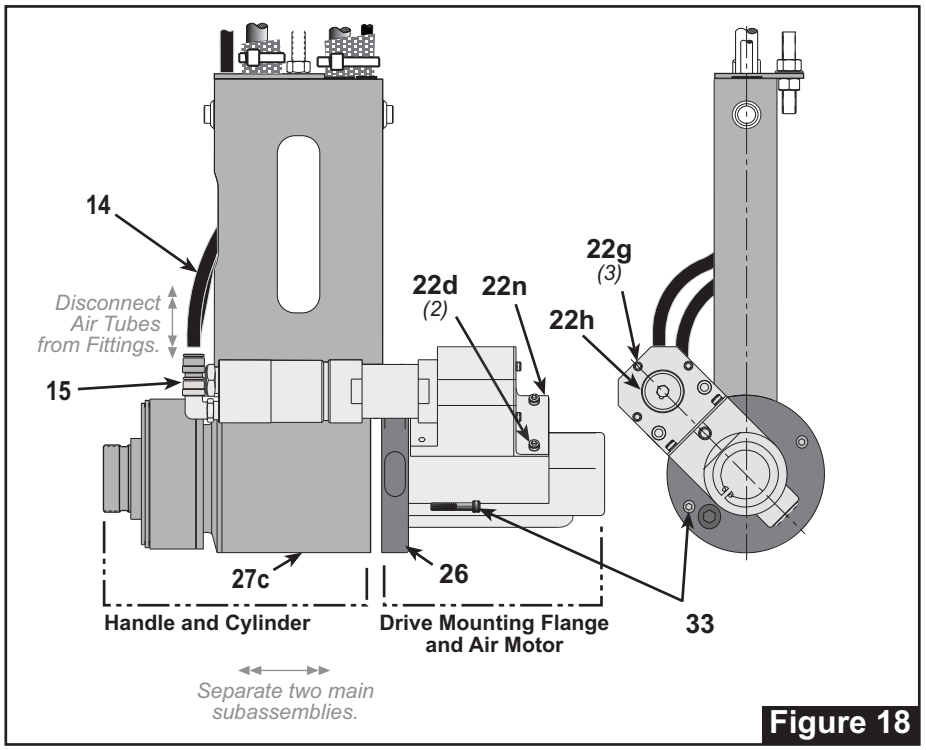


Figure 18

Disassembly (continued)

16. Remove Gear Cover (22n), and push Drive Gear Bushing (22h) out of cover. *(Figure 19)*

17. Unscrew four remaining Motor Mount Screws (22d), andLift Motor Mount (22c) away from Central Housing (22s).

18. With a large screwdriver through the bottom of the Motor Mount, carefully pry the Drive Gear (22f) off the Motor Shaft *(Figure 20)*.

19. Slide Spacer (22j) off Motor Shaft.

20. Unscrew four Screws (22d) holding Motor to Motor Mount.

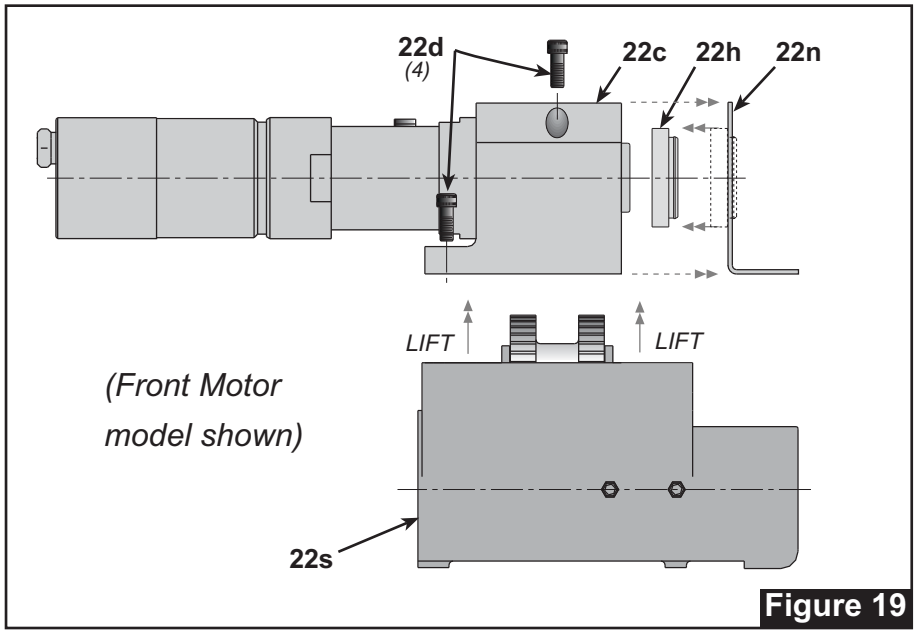


Figure 19

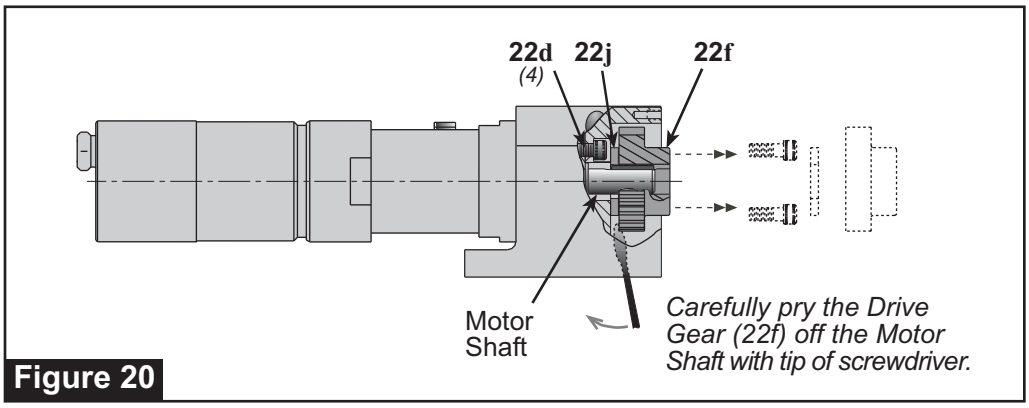


Figure 20

Rear Motor Models

(Figure 21)

21. Using hex key, remove Trigger Switch Assembly (18) from Motor.

22. Loosen Set Screw, and remove Trigger Switch from Switch Holder. Using a screwdriver, remove wires from Switch.

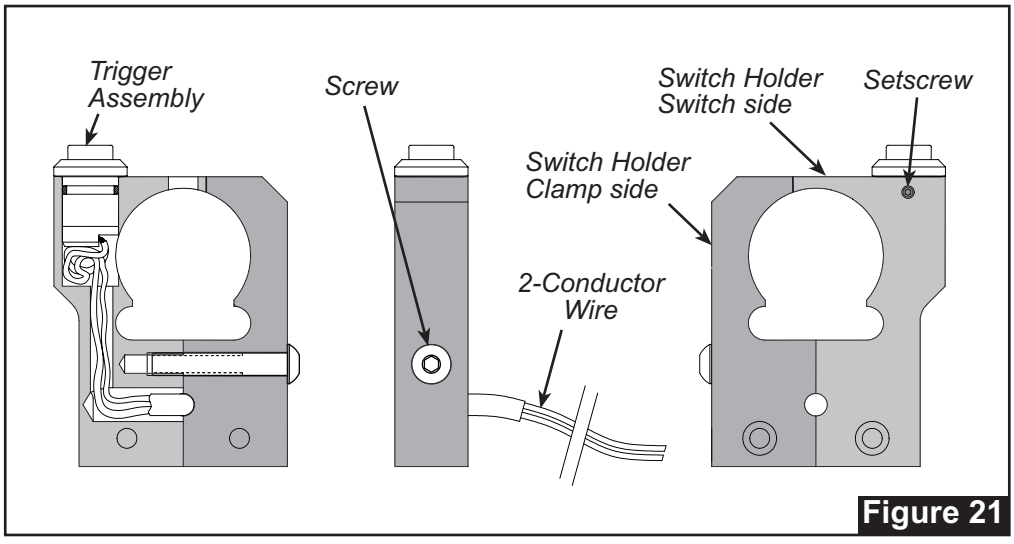


Figure 21

DISASSEMBLY (CONTINUED)

Hose Guard/Handle *(Figures 22 & 23)*

23. Using an Allen wrench, remove two Screws holding Handle to Cylinder, and two Screws holding both halves together. *(Figure 22)*

24. Remove Cable Suspension Assembly from handle, and separate Handle halves.

25. Unscrew Couplers from Hoses. Drain fluid, then remove Hoses from Cylinder and drain cylinder. *(Figure 23)*

Intermediate Gear & Bearing; Drive Mounting Flange *(Figures 24 & 25)*

26. With hex key, unscrew four screws holding Drive Mounting Flange to Central Gear Housing, then unscrew four screws holding Motor boss on Central Gear Housing. *(Figure 24)*

27. Lift Motor boss off and remove shaft locking screw.

28. While pulling Shaft out of Motor boss, lift out intermediate gear and spacers, and remove both Ball Bearing Assemblies from Intermediate Gear. *(Figure 25)*

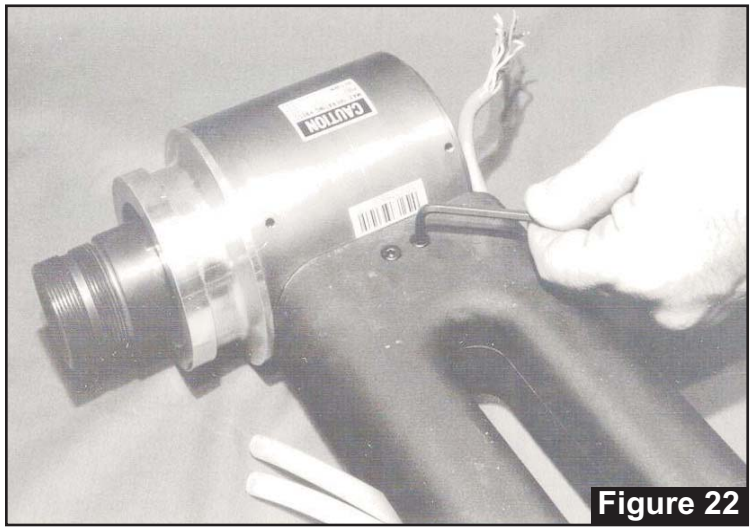


Figure 22

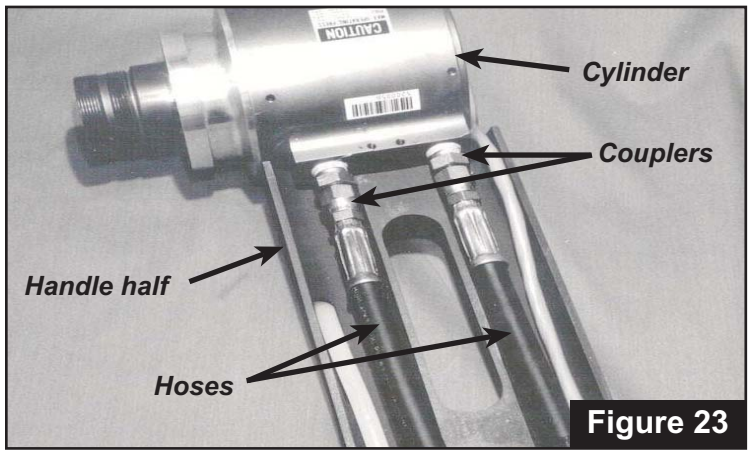


Figure 23

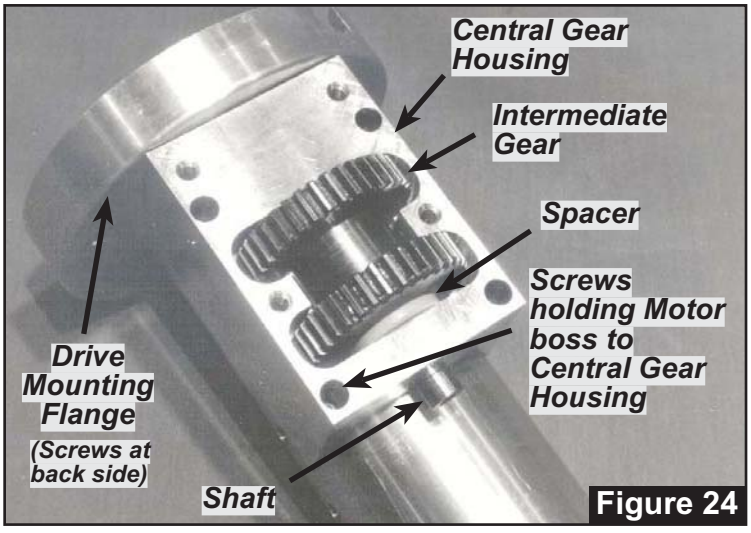


Figure 24

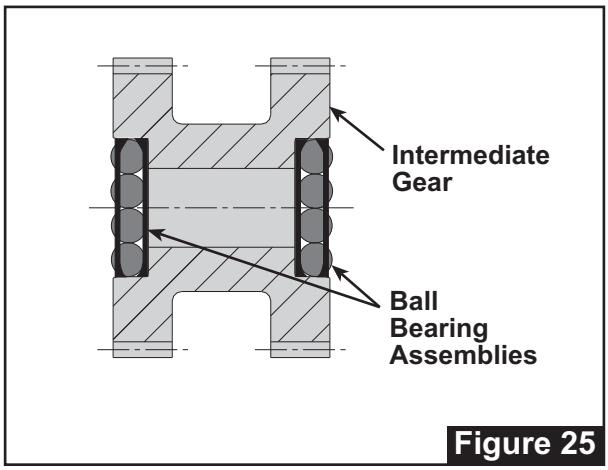


Figure 25

Disassembly (continued)

Internal Drive Gear & Bearing *(Figure 26)*

29. Using a hex key, remove two Screws holding Actuator Disk Key within Central Housing.

30. With TRUARC pliers, remove the larger of the two Retaining Rings; the one which holds the Drive Gear Assembly in the Housing.

31. With a soft dowel, tap/push Internal Drive Gear out of Housing.

32. Remove the smaller Retaining Ring and the Ball Bearing from the Drive Gear.

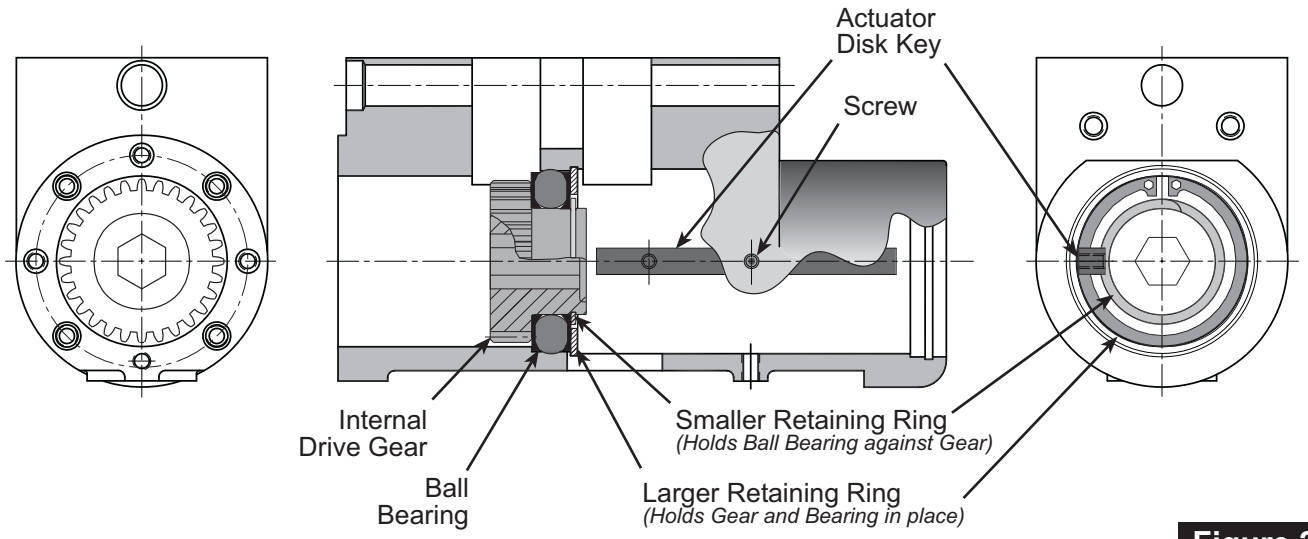


Figure 26

Cylinder *(Figures 27 & 28)*

33. Remove Locking Disc from Piston, and screw Piston Assembly Tool, Huck part number 124178, onto end of Piston. *(Figure 27)*

34. Slide Pin Spanner Assembly, Huck part number 123607, over Piston Assembly Tool, and align dowels with holes at face of Cylinder End Cap. Press Spanner Assembly into End Cap. *(Figure 28)*

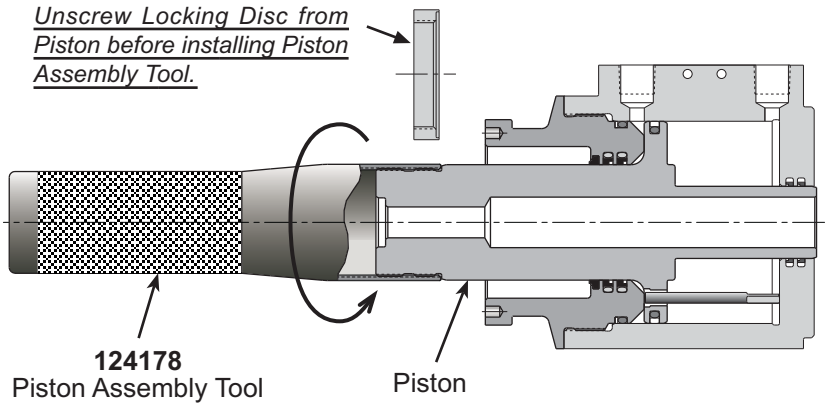


Figure 27

DISASSEMBLY (CONTINUED)

Cylinder (continued)

35. Screw two Socket Head Cap Screws (supplied with Spanner Assembly) into End Cap.

36. Unscrew Cylinder End Cap with Spanner Assembly, sliding it over Piston and Piston Assembly Tool, and drain fluid.

37. Remove Piston from Cylinder.

38. Remove Dump Valve and all seals from Piston.

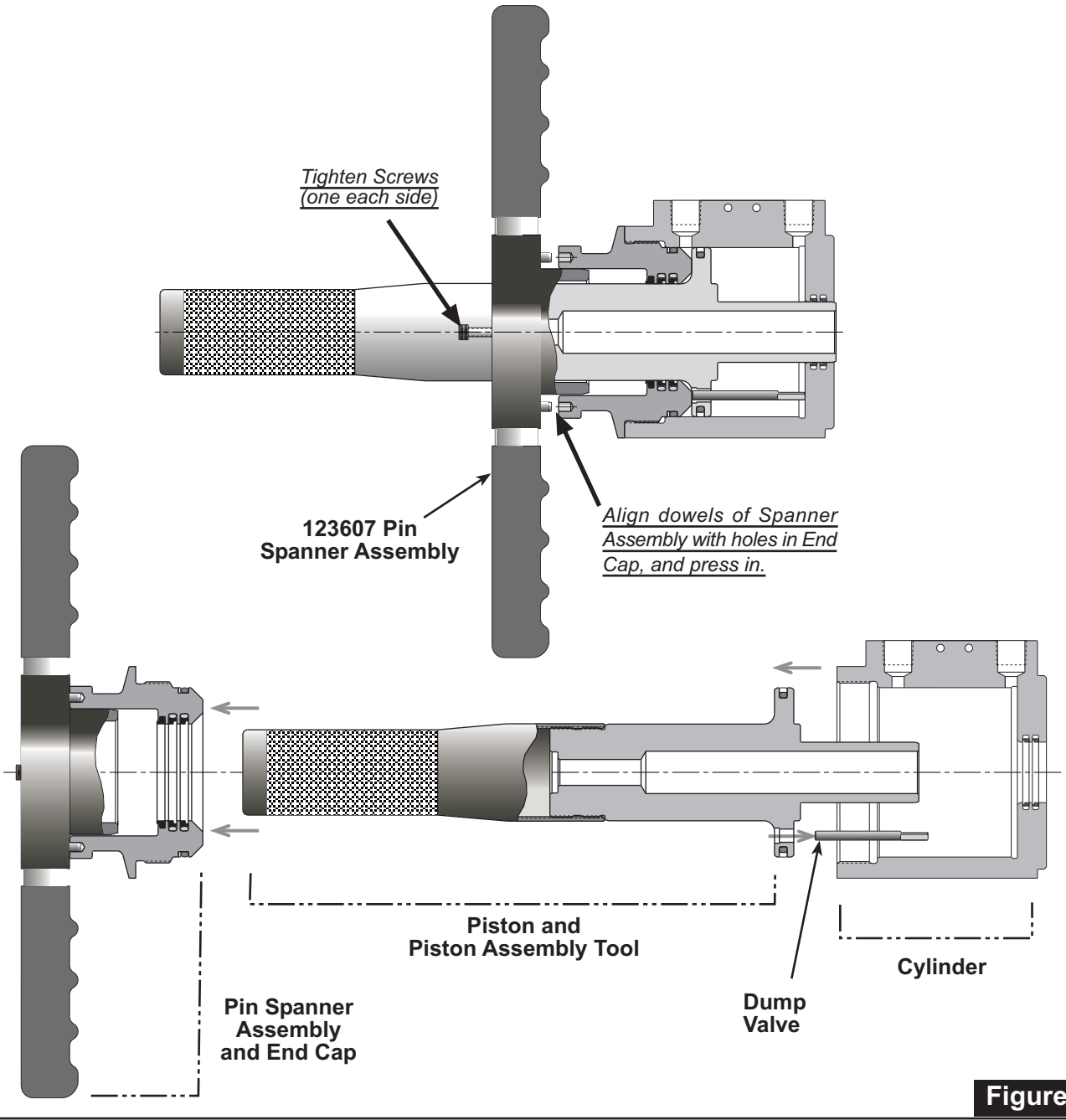

Tighten Screws (one each side)
123607 Pin Spanner Assembly
Align dowels of Spanner Assembly with holes in End Cap, and press in.
Piston and Piston Assembly Tool
Cylinder
Pin Spanner Assembly and End Cap
Dump Valve

Figure 28

Assembly

Refer to appropriate illustrations and general maintenance. The following procedure is for complete assembly. ***Always replace seals, wipers, O-rings and back-up rings of disassembled subassemblies.***

Cylinder & Piston Assemblies

(Figures 28-32)

1. Inspect and clean out seal grooves at base of Cylinder.

2. Liberally apply lubricant to O-rings and Step Seals, and install as shown in Figure 29. **NOTE: Before installing Step Seals, be sure that notch of seal is oriented toward inside of Cylinder as shown.**

3. Inspect and clean out Piston seal groove. *(Figure 30)*

4. Liberally apply lubricant to O-ring, and install in groove.

5. Slightly stretch GLYD Ring seal ***(no more than needed for installation)***, liberally apply lubricant to it, then install it over O-ring in Piston groove.

6. Slide Glyd Ring Compressor, Huck part number 123496, completely over Piston to compress the GLYD Ring into the Piston groove.

7. Slide Dump Valve through Piston flange. **Important: Flats of Valve must be positioned toward the unthreaded end of Piston as shown.**

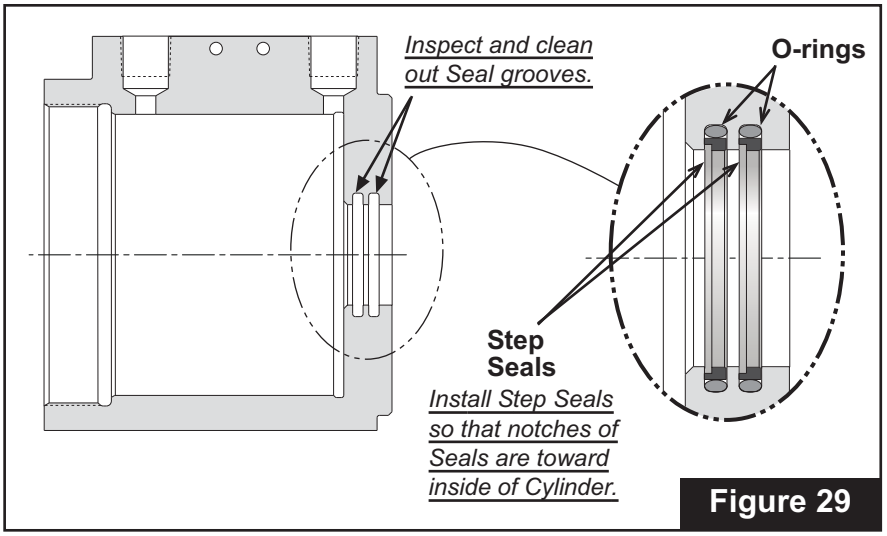

Inspect and clean out Seal grooves.
O-rings
Step Seals
Install Step Seals so that notches of Seals are toward inside of Cylinder.

Figure 29

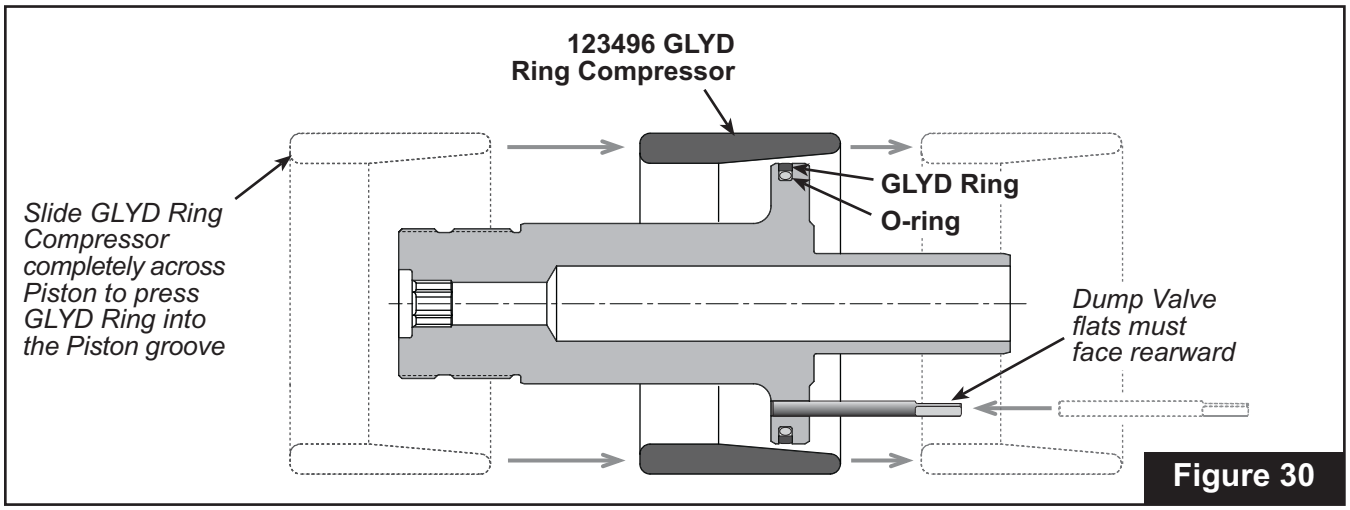

123496 GLYD Ring Compressor
Slide GLYD Ring Compressor completely across Piston to press GLYD Ring into the Piston groove
GLYD Ring
O-ring
Dump Valve flats must face rearward

Figure 30

ASSEMBLY (CONTINUED)

Cylinder & Piston Assemblies *(cont.)*

8. Install Piston Insertion Plug, Huck part number 123494, in back (unthreaded) end of Piston. *(Figure 31)*

9. Install GLYD Ring Insertion Tool, Huck part number 121694-HS52, in Cylinder.

10. Push Piston into Cylinder so that Piston Insertion Plug protrudes from rear of Cylinder.

11. Remove GLYD Ring Insertion Tool and Piston Insertion Plug.

12. Inspect and clean internal and external grooves of Cylinder End Cap. *(Figure 32)*

13. Liberally apply lubricant to O-rings, Back-up Ring, Wiper and Step Seals, and install as shown in Figure 32. **NOTE: Before installing Step Seals, be sure that notch of seal is oriented toward inside of End Cap as shown.**

14. Screw Piston Assembly Tool onto Piston, and slide Cylinder End Cap over Piston Assembly Tool. *(See Figure 28)*

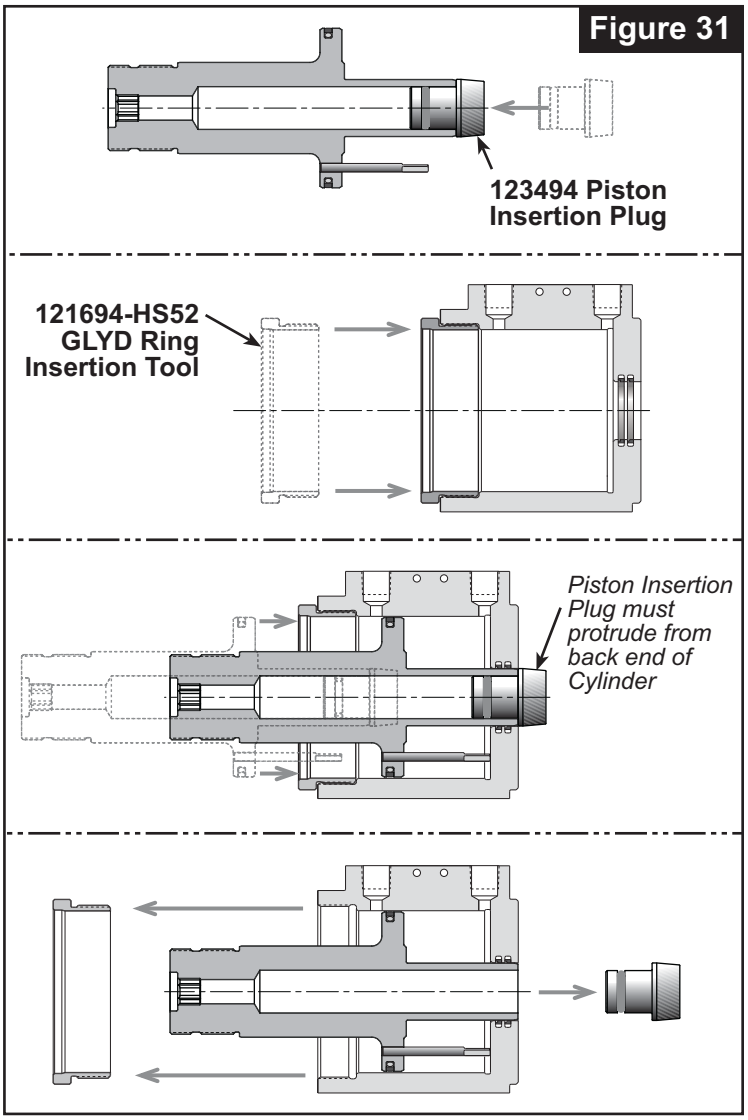

123494 Piston Insertion Plug
121694-HS52 GLYD Ring Insertion Tool
Piston Insertion Plug must protrude from back end of Cylinder

Figure 31

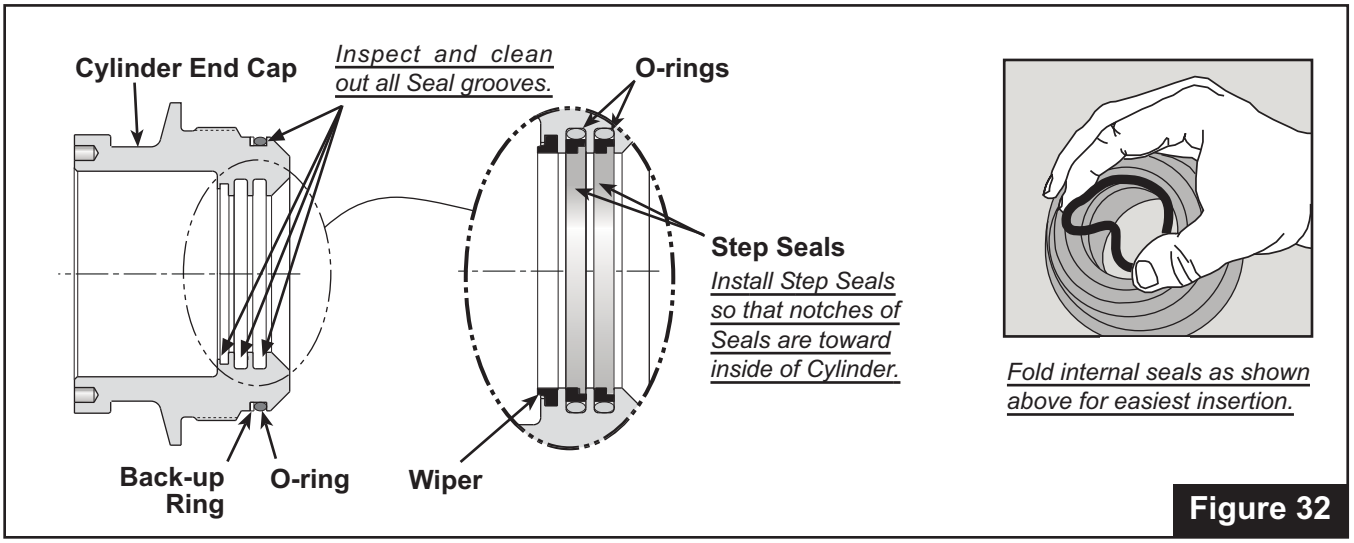

Cylinder End Cap
Inspect and clean out all Seal grooves.
O-rings
Step Seals
Install Step Seals so that notches of Seals are toward inside of Cylinder.
Back-up Ring
O-ring
Wiper
Fold internal seals as shown above for easiest insertion.

Figure 32

ASSEMBLY (CONTINUED)

15. Using Pin Spanner Assembly, screw Cylinder End Cap onto Cylinder, and tighten until Cap bottoms on Cylinder. *(Figure 28)*

16. Remove Piston Assembly Tool and Pin Spanner Assembly.

17. Thread Hoses onto Cylinder as shown in Figures 7a, 7b, and 14. (Screw Hose with male nipple into port "P" of Cylinder, and hose with female coupler into port marked "R".) Rub Slic-Tite® TEFLON® thread compound, or equivalent, on pipe threads to prevent leaks and for ease of assembly.

CAUTION: Do not use TEFLON® tape on pipe threads. Pipe threads may cause tape to shred resulting in tool malfunction. (Slic-Tite is available in stick form as Huck P/N 503237.)

Internal Drive Gear & Bearing Assembly

18. Pack Bearing with bearing grease, press it into shoulder of Internal Drive Gear, and install Retaining Rings. *(Figure 33)*
19. Grease Bearing and Gear assembly, and press it into Gear Housing.

20. Install Actuator Disk Key in housing. Apply Loctite® to both screws and tighten to specification.

Intermediate Drive Gear & Bearing Assy; Drive Mounting Flange *(Figure 33)*

21. Pack Bearings with bearing grease and press flush into Intermediate Gear.

22. While pushing Shaft through motor boss, install Intermediate Gear and Spacers, and tighten Shaft Locking Screw against Shaft.

23. Attach Drive Mounting Flange to central Housing with eight Screws. Apply blue Loctite to threads and tighten to specification.

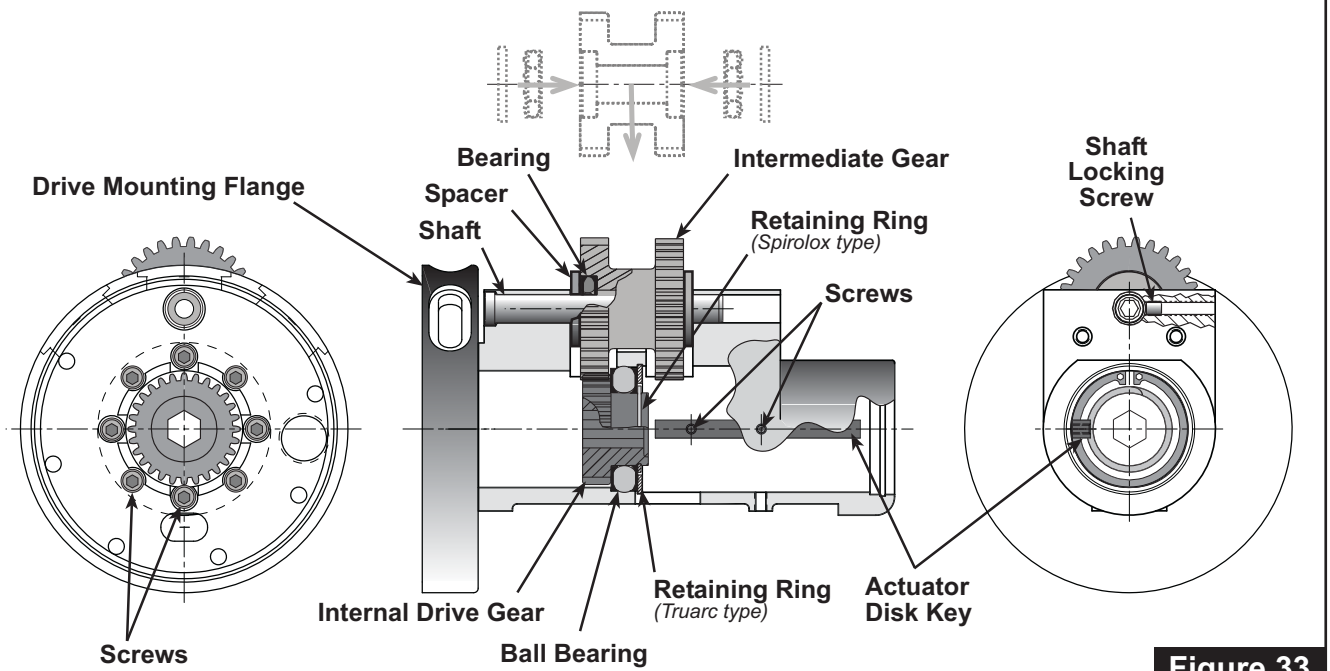


Figure 33

Slic-tite is a registered trademark of LA-CO Industries, Inc.
TEFLON is a registered trademark of E. I. du Pont de Nemours and Company
Loctite is a registered trademark of Henkel Corporation, U.S.A.

ASSEMBLY (CONTINUED)

24. Apply Slic-Tite to male threads of Air Motor Elbows and Muffler, then screw components into Air Motor and tighten. ***Note: Flat on base of motor must be positioned for Intermediate Gear clearance. Flat is parallel with base of Motor Mount and shows in mount.***

25. Place MotorMount over Motor, apply Loctite to four remaining Screws, and tighten to specification.

26. Apply Loctite to four Air Motor retaining Screws and tighten to specification.

27. Slide white Spacer over Air Motor shaft.

28. After applying bearing grease to teeth of External Drive Gear and lubricating Gear shoulder and bore, align key with keyway, and press Drive Gear onto Motor Shaft.

29. Push shoulder of Drive Gear Bushing into Gear Cover until it snaps in place.

30. Slide assembled Bushing and Cover over Drive Gear shoulder.

31. Align Gear Cover Mounting holes with Motor Mount holes, apply Loctite to Gear Cover Retaining Screws, and tighten to specification.

32. Place assembled Air Motor and Mount on Drive Gear and Bearing Assembly, apply Loctite to Motor Mount Reatining Screws and tighten to specification.

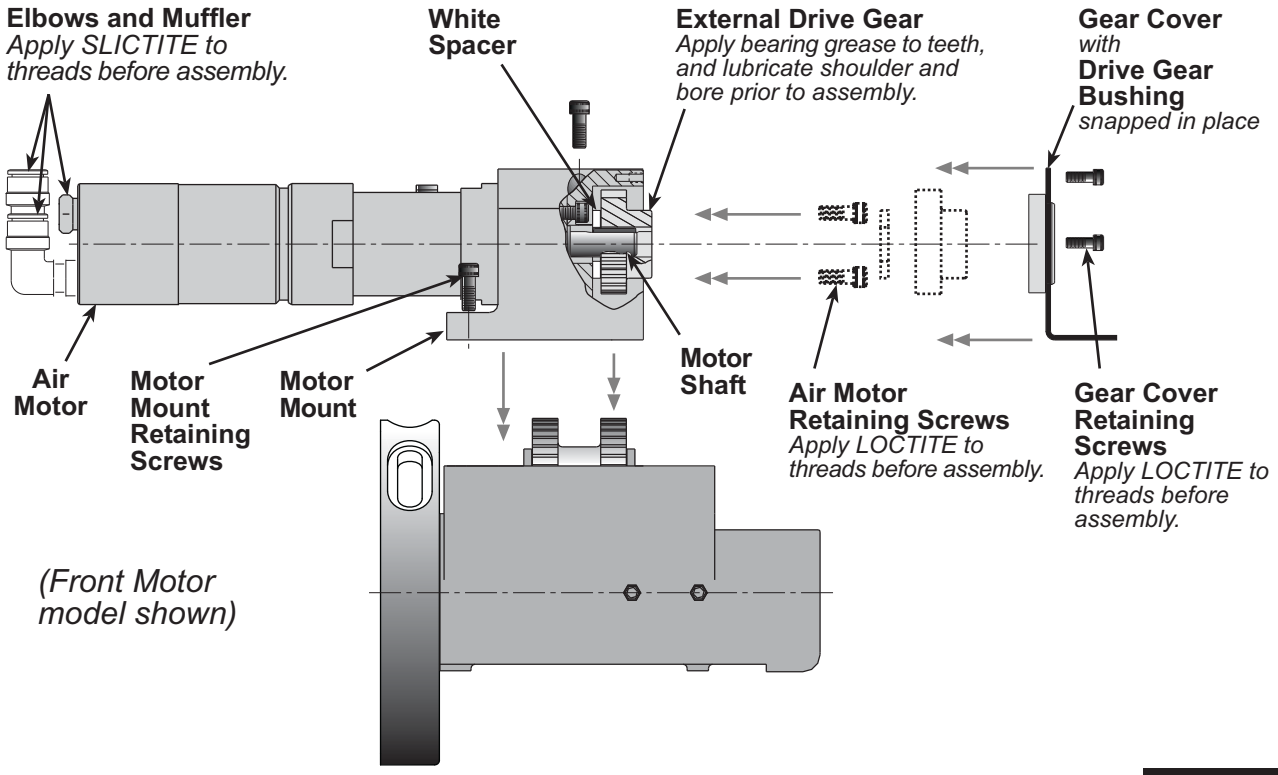

Elbows and Muffler
Apply SLICTITE to threads before assembly.
White Spacer
External Drive Gear
Apply bearing grease to teeth, and lubricate shoulder and bore prior to assembly.
Gear Cover with Drive Gear Bushing snapped in place
Air Motor
Motor Mount Retaining Screws
Motor Mount
Motor Shaft
Air Motor Retaining Screws
Apply LOCTITE to threads before assembly.
Gear Cover Retaining Screws
Apply LOCTITE to threads before assembly.
(Front Motor model shown)

Figure 34

ASSEMBLY (CONTINUED)

Handle and Cylinder Assembly

33. Attach one Handle half to Cylinder. Where used, position optional secondary switch and wiring in Handle.

34. Attach other Handle half to Cylinder, and install remaining Handle screws.

35. Attach Suspension Bracket to Handle. *(Figure 35)*

36. Install Handle and Cradle Assembly.

Cylinder and Gear Housing/Drive Mounting Flange Assembly

37. Carefully slide Electrical Cord through appropriate slot of drive mounting flange.

CAUTION: Be careful not to pinch the electrical cord.

38. When cord is properly routed, engage pilot bore of flange, and align bolt holes of cylinder and flange in required orientation.

39. Apply one drop of removable Loctite to both retainaing screws, and tighten to specification.

Trigger Cord and Power Cord to Terminal Block; Limit Switch Cover

40. Place spacers and circuit board in position, and attach 3 standoffs.

41. Connect wires of trigger cord and wires of power cord to appropriate terminals of terminal block.

42. Place switch actuator slide and spring in position, holding in place while attaching cover.

43. While holding down cover to prevent loss of spring, attach limit switch cover with 3 screws.

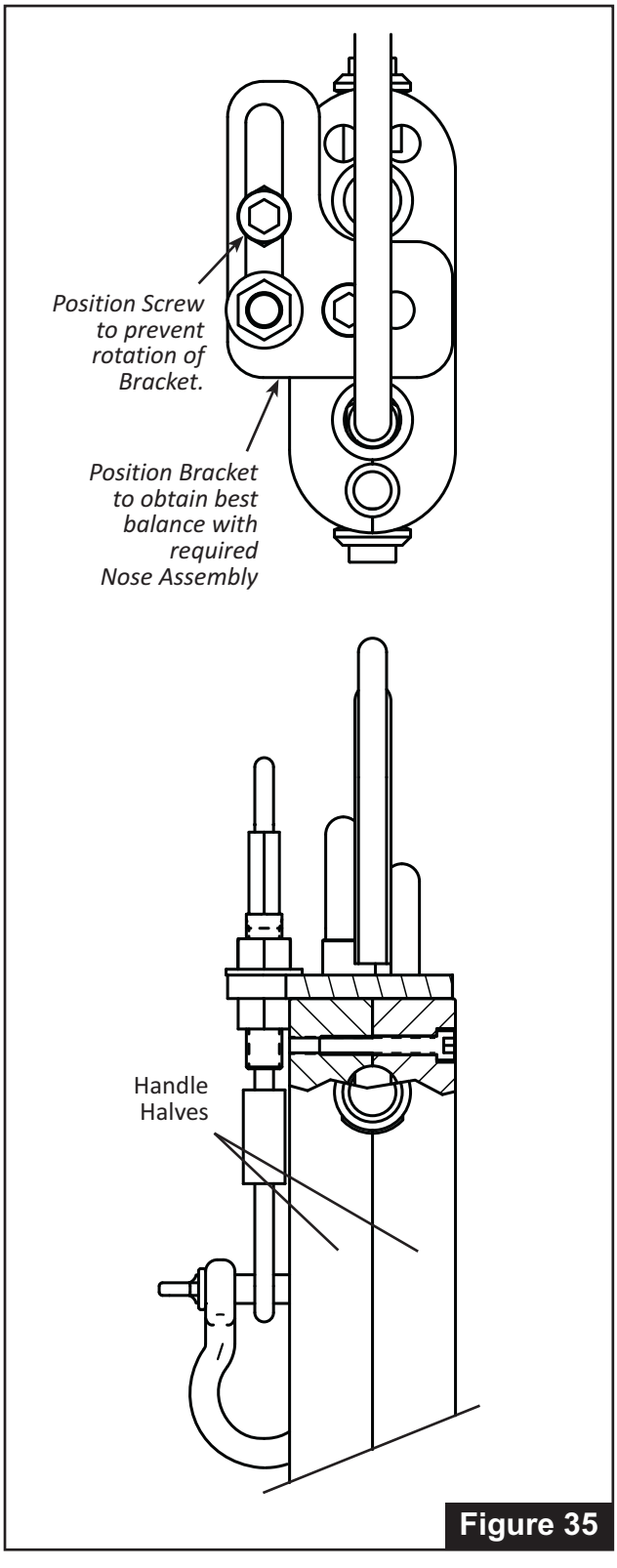

Position Screw to prevent rotation of Bracket.
Position Bracket to obtain best balance with required Nose Assembly
Handle Halves

Figure 35

Front Air Motor Drive; Air Lines

44. Press on fitting with ; push tubing ing in; then release thumb pressure.

ASSEMBLY (CONTINUED)

Actuator Disk and Rod Assembly

45. Apply 2 drops of Loctite to threads of actuator rod.

46. Screw actuator disk onto actuator rod until rod shoulder seats tightly against disk face. Follow directions on bottle, and allow Loctite to "set" for best results.

Actuator Rod Assembly; Conical Spring; Drive Shaft

47. From rear, slide actuator rod through internal drive gear. ***NOTE: "Keyway" of actuator disk must be aligned with actuator disk key.***

48. Slide conical spring into central gear housing against actuator disk. Place end cap against spring and push into counterbore of housing. Use TRUARC® pliers to install retaining ring.

49. Apply grease to both ends of drive shaft and piston counterbore. Slide drive shaft through bore of piston, and engage shaft drive with internal drive gear.

CAUTION: Be sure counterbored area of piston is greased.

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Limit Switch Operation & Adjustment

All current variants of HS37 and HS52 Huck-Spin Installation Tools are fitted with a type of Limit Switch Assembly which includes an electrical Printed Circuit Board (PCB). With this type of Assembly, both Limit Switches 1 and 2 are permanently attached to the PCB at a fixed distance apart.

OPERATION

The fitting of the Limit Switch Assembly onto the Tool is shown on the tool assembly drawing. When a Huck-Spin Bolt enters the rotating Nose Assembly Thimble, the end of the Bolt comes into contact with the Actuator Rod and Disc Assembly that is pushed toward the rear of the Tool. As the Disc moves, it allows the Compression Spring in the Limit Switch Assembly to move the Limit Switch Lever toward the rear of the Tool. Lever movement causes Limit Switch 1 to open (normally closed).

Continued movement of the Lever causes Limit Switch 2 to close (normally open). The Lever has a Slot that is located over the rear Standoff and is held in place by the Cover. Clearance between the Cover and the shoulder of the rear Standoff allows a sliding movement of the Lever to take place.

When the Huck-Spin System is being used to install Fasteners, signals from the Limit Switches are used by the Controller to control the function of the Tool. The signal from Limit Switch 2 is used by the Controller to make the Tool go into a full Collar Swage Cycle. *Correct adjustment of Limit Switch 2 is essential for proper tool function. Incorrect adjustment will result in malfunction and may cause insufficient Collar Swage or failure to release the Tool from the Bolt at the completion of the Installation Cycle.*

Adjustment of the Limit Switches is affected by changing the angle of the Switch Arms on the Limit Switch Lever.

CHECKING PROCEDURE:

WARNING: During checking and adjustment of limit switches, it will be necessary to insert the gauge into the nose assembly thimble by hand. Therefore, the air supply at the manifold and the electrical Powerig cord at the Powerig should be disconnected to prevent possible personal injury.

1. Check that the Tool Piston is in the full forward position. It will normally be in this position unless there is an Hydraulic System problem or the Powerig has been switched off during a Fastener Installation Cycle. When the piston is in the full forward position, the front of the Nose Assembly Thimble will be approx. 0.20-inch (5mm) inside of the Swaging Anvil.

2. Ensure that the Air Supply is disconnected at the Manifold and the Electrical Powerig Cord is disconnected at the Powerig. Use suitable warning flags to inform other people not to reconnect those items.

3. For HUCK-SPIN systems that do not have switch indicator lights built into the manifold, plug the Limit Switch Light Box into the electrical Socket on the side of the Manifold Cover, (Note: Not required if Manifold is equipped with integral Indicator Lights.)

4. Using the appropriate 123940-(xx) Gauge, insert the "TOUCH-OFF" side of the gauge into the Thimble until it bottoms. In this position only the Blue LS-1 lamp should be on, indicating that Limit Switch 1 is open. (Note: The "xx" in 123940-(xx) indicates fastener size; for 1/2", xx = -16; for 20mm, xx = -M20, etc.)

5. Insert the opposite, "TOUCH-ON" end of the 123940-(xx) Gauge into the thimble until it bottoms. In this position both the blue LS-1 lamp and the yellow LS-2 lamp should be on, indicating that Limit Switch 1 is open and Limit Switch 2 is closed.

continued

Limit Switch Operation & Adjustment (continued)

ADJUSTMENT

Normally it is only necessary to adjust the setting of Limit Switch 2. However, when adjustment is complete, always check Limit Switch 1 again and adjust that Switch if necessary.

TO ADJUST LIMIT SWITCH 2

1. Remove ONLY the TWO Retaining Screws nearest the FRONT of the Tool from the Limit Switch Cover.

CAUTION: The limit switch cover retains the limit switch lever in place against the compression of a small spring. Give care when removing the cover to avoid forcible ejection of the lever and spring from their normal working positions.

2. Hold the Cover in position while removing the third Retaining Screw.

3. Slowly lift and slide the Cover toward the rear of the Tool until the Lever is exposed. Holding the Lever in place, continue to slide the Cover toward the rear of the Tool and then upwards to remove it completely.

4. Carefully ease the Lever upwards from the Switch Assembly making sure that the Spring is restrained.

5. Make the necessary adjustment to the Limit Switch Lever Arms. Hold the top section of the Lever in a vice or Wide Nose Grips/Pliers to ensure that only the Limit Switch Arms bend as shown on the Drawing. ***Make only small adjustments at a time.***

REASSEMBLY

6. Insert either end of the Limit Switch Setting Gauge into the front of the Nose Assembly to push the Actuator Rod rearward. Hold the Spring in place on its locator tab at the end of the PCB. Place the Lever's locating tab into the opposite end of the Spring. Push the Lever forward and downward, compressing the Spring, until it locates onto the rear Standoff. Make sure that the long Lever 2 Arm is located IN FRONT of the Actuator Disk. Remove the Gauge from the Nose Assembly, releasing the Actuator Rod. The Lever should be pushed forward against Limit Switch 1 by the small Spring.

7. Holding the Lever in place, slide the Cover over the PCB from the rear of the Tool towards the front of the Tool. When the Cover is correctly located on the three Standoffs, it will hold the Lever in the correct position.

8. Replace the three Screws that hold the Cover in Place.

9. Re-check the Limit Switch operation as before.

NOTE: Some Switch Covers may have a small hole that exposes the Lever (Switch Actuator Slide). This hole can ease installation of the Cover by placing a small screwdriver or hex key through the hole in the Cover and bearing it against the Lever while sliding the Cover into position.

Kits and Accessories

Cylinder Assy 121453 Seal Kit	-	HS52SEALKIT
Screw Kit	-	HS52SCREWKIT
Tools Kit (Hex Keys, Pliers, etc.)	-	HS52TOOLKIT
Air Motor Kit	-	121474KIT

Troubleshooting

Always check the simplest possible cause of a malfunction first (example: a loose or disconnected trigger line). Then proceed logically and eliminate each possible cause until the defect is found. Where possible, substitute known good parts for suspected defective parts. Use the following steps as an aid in troubleshooting.

1. *Tool fails to operate when trigger is pressed.*
   a. Inoperative POWERIG® Hydraulic Unit. See applicable instruction manual.
   b. Loose electrical connections.
   c. Damaged trigger assembly.
   d. Loose or faulty hose coupling.

2. *Tool operates in reverse.*
   a. Reversed hose connections between hydraulic unit and tool.

3. *Tool leaks hydraulic fluid.*
   a. Defective tool O-rings or loose connections at tool.

4. *Hydraulic couplers leak fluid.*
   a. Damaged or worn O-rings in Coupler Body Coupler

5. *Hydraulic fluid overheats.*
   a. Unit not operating properly. See units manual.
   b. Unit running in reverse (918; 918-5 only). See unit's manual.

6. *Tool operates erratically and fails to install fastener properly.*
   a. Low or erratic hydraulic pressure. Air in system.
   b. Damaged or worn Piston O-ring in tool.
   c. Excessive wear on sliding surfaces of tool parts.

7. *Pull grooves on fastener pintail stripped during PULL stroke.*
   a. Operator not sliding anvil completely onto fastener pintail.
   b. Incorrect fastener grip.
   c. Worn or damaged jaw segments.
   d. Metal particles in jaw grooves.
   e. Excessive sheet gap.

8. *Collar of fastener not completely swaged.*
   a. Improper tool operation. See No. 6.
   b. Scored anvil.

9. *Tool "hangs up" on swaged collar of fastener.*
   a. Improper tool operation. See No. 6.
   b. RETURN pressure too low.
   c. Not enough collar lubricant.
   d. Nose assembly not installed correctly.

10. *Pintail of fastener fails to break.*
    a. Improper tool operation. See No. 6.
    b. Pull grooves on fastener stripped. See No. 7.
    c. PULL pressure too low.

11. *Nose will not release broken pintail.*
    a. Nose assembly not installed correctly.

Limited Warranties

Tooling Warranty:

Huck warrants that tooling and other items (excluding fasteners, and hereinafter referred as "other items") manufactured by Huck shall be free from defects in workmanship and materials for a period of ninety (90) days from the date of original purchase.

Warranty on "non standard or custom manufactured products":

With regard to non-standard products or custom manufactured products to customer's specifications, Huck warrants for a period of ninety (90) days from the date of purchase that such products shall meet Buyer's specifications, be free of defects in workmanship and materials. Such warranty shall not be effective with respect to non-standard or custom products manufactured using buyer-supplied molds, material, tooling and fixtures that are not in good condition or repair and suitable for their intended purpose.

THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE HEREOF. HUCK MAKES NO OTHER WARRANTIES AND EXPRESSLY DISCLAIMS ANY OTHER WARRANTIES, INCLUDING IMPLIED WARRANTIES AS TO MERCHANTABILITY OR AS TO THE FITNESS OF THE TOOLING, OTHER ITEMS, NONSTANDARD OR CUSTOM MANUFACTURED PRODUCTS FOR ANY PARTICULAR PURPOSE AND HUCK SHALL NOT BE LIABLE FOR ANY LOSS OR DAMAGE, DIRECTLY OR INDIRECTLY, ARISING FROM THE USE OF SUCH TOOLING, OTHER ITEMS, NONSTANDARD OR CUSTOM MANUFACTURED PRODUCTS OR BREACH OF WARRANTY OR FOR ANY CLAIM FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES.

Huck's sole liability and Buyer's exclusive remedy for any breach of warranty shall be limited, at Huck's option, to replacement or repair, at FOB Huck's plant, of Huck manufactured tooling, other items, nonstandard or custom products found to be defective in specifications, workmanship and materials not otherwise the direct or indirect cause of Buyer supplied molds, material, tooling or fixtures. Buyer shall give Huck written notice of claims for defects within the ninety (90) day warranty period for tooling, other items, nonstandard or custom products described above and Huck shall inspect products for which such claim is made.

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The only warranties made with respect to such tool, part(s) or other items thereof are those made by the manufacturer thereof and Huck agrees to cooperate with Buyer in enforcing such warranties when such action is necessary.

Huck shall not be liable for any loss or damage resulting from delays or nonfulfillment of orders owing to strikes, fires, accidents, transportation companies or for any reason or reasons beyond the control of the Huck or its suppliers.

Huck Installation Equipment:

Huck International, Inc. reserves the right to make changes in specifications and design and to discontinue models without notice.

Huck Installation Equipment should be serviced by trained service technicians only.

Always give the Serial Number of the equipment when corresponding or ordering service parts.

Complete repair facilities are maintained by Huck International, Inc. Please contact one of the offices listed below.

Eastern
One Corporate Drive Kingston, New York 12401-0250
Telephone (845) 331-7300 FAX (845) 334-7333

Outside USA and Canada
Contact your nearest Huck International Office, see back cover.

In addition to the above repair facilities, there are Authorized Tool Service Centers (ATSC's) located throughout the United States. These service centers offer repair services, spare parts, Service Parts Kits, Service Tools Kits and Nose Assemblies. Please contact your Huck Representative or the nearest Huck office listed on the back cover for the ATSC in your area.

HUCK

For the Long Haul™

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